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A multiple regression analysis of locus of control and psychological flexibility regarding the total mental well-being of Muslims

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A MULTIPLE REGRESSION ANALYSIS OF LOCUS OF CONTROL AND PSYCHOLOGICAL FLEXIBILITY REGARDING THE TOTAL MENTAL WELL-BEING OF MUSLIMS

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Abstract

A MULTIPLE REGRESSION ANALYSIS OF LOCUS OF CONTROL AND PSYCHOLOGICAL FLEXIBILITY REGARDING THE TOTAL MENTAL WELL-BEING OF MUSLIMS

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This study was designed to investigate the relationships between mental health, psychological flexibility, and locus of control within the Muslim population, and how these variables are related to demographic characteristics such as gender, level of spirituality, and marital status. The sample of 235 participants was taken from the worldwide adult Muslim population. Mental health was measured by PROMIS-57 survey, psychological flexibility was measured by the AAQ-II survey, and locus of control was measured by the MHLC survey. All data were self-reported via online form. There was an inverse relationship between level of spirituality and poor mental health (high PROMIS-57 scores) and psychological inflexibility. Married people were less likely to be associated with poor mental health (high PROMIS-57 scores) and psychological inflexibility. Men were more likely to be associated with higher powerful others external locus. No difference in mental health was found based on gender. Mental health and psychological flexibility were positively correlated. Among the entire sample, poor mental health was correlated with greater reliance on powerful others and chance external loci of control. Powerful others locus of control was also correlated with psychological inflexibility. Psychological flexibility was a significant predictor of mental health. The findings of this study suggest that

higher spirituality levels, that is, more devout practice and belief among Muslims may be beneficial for mental health. This health acceptance must be tempered, however, with an equally healthy internal locus of control, or sense of personal agency. There remains a significant dearth of rigorous studies of the Muslim population in the social sciences, and much work remains to be done.

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Chapter I

Introduction

The Muslim population is increasing globally and many Muslims occupy positions of power and influence. Even so, Islam and Muslims remain widely misunderstood. Islam is not a monolithic faith; there are many ways to embrace and practice this religion. Although founded in the Middle East—the two holiest cities Mecca and Medina are located in the Kingdom of Saudi Arabia—most Muslims live elsewhere. Despite the fact that Islam shares a common history with Judaism and Christianity, it remains a mystery for many in the West. The presence of Muslims awakens curiosity in some and fear in others. Therefore, this paper will begin with brief discussion about this vibrant and notable group of people. This exploration will mainly involve social sciences because few peer-reviewed scientific studies have been conducted about the diverse ways of practicing Islam and the impact this faith has on economics, politics, and health.

Islam is the fastest growing religion, and the worldwide Muslim population is expected to grow more than twice as fast as the overall world population between 2010 and 2050 and beyond (Lipka & Hackett, 2015). Thus, understanding this community of faith is imperative for healthcare providers. Changes in the political and economic realms affect the number of people influenced by mental illnesses, as seen among Muslims living in the U.S. after the terrorist attack on September 11, 2001 (Abu-Ras & Abu-Bader, 2008). Since then, their stress level due to discrimination, religious persecution, racial profiling and stereotyping has increased exponentially (Abu-Ras & Abu-Bader, 2008; Amer & Bagasra, 2013).

Religion is very important to Muslims' lives. They observe specific prayers of the day for morning and evening, for entering different places, for wearing clothes and eating. Ali, Milstein, and Marzuk (2005) said, "Muslims consider Islam to be central to their way of life and place

great value on the integrity and functioning of the family" (p. 202). Muslims believe in their religion's tenets to treat any problems that arise, from work-related issues to child-rearing challenges.

The use of Islam to assist Muslims with mental illnesses is a common practice worldwide. Religious factors are important in managing mental illness; in particular, Muslims believe in prayer and accepting their fate to reduce depression (Loewenthal & Cinnirella, 1999). A clinical mental health approach considering the importance of accepting fate along with taking personal responsibility, such as acceptance-based cognitive therapy, is welcomed among believers (Tan, 2007).

Professional counselors need to know about this population in order to work with them in more effective ways (Ibrahim & Dykeman, 2011). Believers in God— "Allah" in Arabic—are encouraged to use their inner resources and to accept Allah's plan for their lives. They must also accept their fate and destiny without questioning Allah's plan. Since Muslims believe that surrendering to Allah's will and accepting the tribulations of life are an opportunity for the healing process, competent clinicians must consider these views (Ahmed, 2000).

The purpose of this study is to examine the relationship between locus of control, psychological flexibility, and the mental health of Muslims. Locus of control is what people believe about how responsible and controllable the environment is regarding the outcome (Rotter, 1966). External locus of control refers to the belief that the situation or results faced by a person is not contingent upon their actions but the consequence of luck, chance, fate, or under the control of powerful others (Rotter, 1966). Internal locus of control implies that individuals have some control over the circumstances of daily life (Rotter, 1966). Previous studies have shown that a higher internal locus of control is linked to positive health habits (Park & Gaffey,

2007). In addition, after a disease is diagnosed, a strong internal locus of control helps to amend psychological outcomes (Stewart & Yuen, 2011). Psychological flexibility refers to "an ability to focus on the present moment and, depending upon what the situation affords, persist with or change one's (even inflexible, stereotypical) behavior in the pursuit of goals and values" (Bond, Flaxman, & Bunce, 2008, p. 645). This study will demonstrate how Muslims reconcile their sense of personal responsibility with the idea of accepting Allah's divine sovereignty and the impact of this belief on their mental health.

Statement of the Problem

In Middle Eastern culture, taking responsibility for your actions is emphasized from early childhood. The reason behind this cultural belief is that eventually people will have to face a divine judgment regarding their conduct in this world. Children in the Middle East are valuable not because of economic or political issues but because of religious reasons (Fernea, 1995). Due to Islam's influence, believers tend to embrace the idea that what happens to human beings is somehow directed by Allah. Rassool (2000) explained that "Muslims embrace the acceptance of the divine, and they seek 'meaning, purpose and happiness' in worldly life and the hereafter. This is achieved through the belief in the 'oneness of Allah,' without any partner" (p. 1479). Therefore, events or circumstances need to be accepted without question because they happened with Allah's guidance and desire. Under this perspective, being a good believer implies accepting Allah's will with resignation. Muslims see fate as a part of their lives, and whatever happens is their test from Allah (Rassool, 2000).

This tradition is how Muslims deal with the suffering and stressors of life. Believers consider that accepting Allah's will without doubt is their main source of hope and meaning. Over the last thirty years, researchers have expressed interest in the scientific understanding of

this belief and practice as it pertains to mental health and total health. However, the connection of locus of control and personal flexibility in relation to the Islamic faith has not been explored in depth by social scientists. Due to this limitation of scientific research, few published articles are available regarding Muslims' acceptance of fate and its relation to mental illnesses. Timely studies are necessary in order to help practitioners understand how to counsel this population.

Since the religion was founded in the 7th century, Muslims have traveled and migrated beyond the Middle East to create a worldwide religion. Americans in particular have been very welcoming, opening doors for the many Muslims who have migrated because of oppressive governments, lack of educational opportunities, financial enterprises, and missionary work. The U.S., because of the democratic and free market economy, provides excellent opportunities for Muslims to enrich their lives. Yet the lives of Muslims in the U.S. are not without challenges. Migrating from one country and culture to another brings difficulties. Many Muslim Americans face considerable pressures, including discrimination, surveillance, and even hate crimes (Amer & Bagasra, 2013). In the face of all this, the issue of mental illnesses among Muslims in America has not being studied thoroughly by culturally sensitive researchers.

Although there are few scientific studies published about the mental health of Muslims, there is a wealth of literature examining the relationship between religion and mental health in general. These studies looking at the connection between religiosity and health suggest that good health is possible when both are considered and seen as part of the whole person (Clements & Ermakova, 2012). A considerable amount of research has made the positive association between spiritual practices and health (Koenig, McCullogh & Laon, 2001). Coping with problems through religion relates significantly to several variables of interest (Ellis, Thomlinson, Gemmill, & Harris, 2012). Religious commitment has a useful association with psychological health,

because religious commitment had a significant inverse association with general anxiety, social anxiety, paranoia, obsession, and compulsion (Galek, Flannelly, Ellison, Silton, Jankowski, 2015). Perhaps the idea of surrendering to divine will and accepting tribulations as opportunities for growth are central elements of using faith for the healing process. The acceptance of fate could reduce stress and assist believers in finding meaning in their lives (Clements & Ermakova, 2012). It seems as if stressful events of daily life are seen and faced differently through the lenses of faith, as people tend to leave these things to divine control (Sandage, Hill, & Vaubel, 2011).

Acceptance and commitment therapy is a type of cognitive behavior therapy that uses acceptance, mindfulness intervention, and commitment to help people change maladaptive behaviors and increase their psychological flexibility (Hayes, Strosahl, & Wilson, 2016). Psychological flexibility refers to "an ability to focus on the present moment and, depending upon what the situation affords, persist with or change one's (even inflexible, stereotypical) behavior in the pursuit of goals and values" (Bond et al., 2008, p. 645). Acceptance and commitment therapy has six key components to increase psychological flexibility: (1) experiential acceptance, (2) cognitive defusion, (3) detachment from the conceptualized self, (4) mindful contact with the present moment, (5) clear values, and (6) values-guided action (Hayes, 2006). The idea of accepting undesirable thoughts is part of being human; people choose to behave in ways consistent with their faith and values. Religious coping needs to be included as one of the most commonly used mechanisms when facing stressful events (Karekla & Constantinou, 2010).

Acceptance and commitment therapy is a contemporary behavioral approach utilized in the psychological treatment of those suffering with chronic diseases such as cancer. Because this is a spiritually sensitive therapy model, it could help patients in accepting negative experiences

as something beyond their control (Karekla & Constantinou, 2010). Therefore, if the person is flexible and open to making use of a variety of religious or spiritual means of coping, they might find peace and wellness even within the torments of disease. Different ways of coping, such as prayer or the reading of sacred books, could be effective; however, a central coping strategy for Muslims is simply accepting fate as being part of Allah's larger plan.

The idea of accepting difficulties as part of Allah's divine plan for humanity is a cherished belief in Islam. In Islam, practicing religious principles, known as religious provision, is considered an act of worshiping Allah, which implies total surrender and trust. Muslims use a combination of internal and external loci of control, also known as bi-local expectancy. Personal responsibility is emphasized because Muslims believe they will face judgment in the afterlife for their actions. Islam also teaches that Allah is omnipotent, and this implicit belief highlights an external locus of control. Many studies have found a positive relationship between religious activities and an internal locus of control (Jackson & Coursey, 1988). Interestingly, happiness among people with bi-local expectancy is high (April, Dharani, Peters, 2012).

Purpose of the Study

The purpose of this study is to examine the relationships between locus of control, psychological flexibility, and mental health of Muslims. This study is important because of the scarcity of published scientific research in this area. Amer and Bagasra (2013) suggest that the scholarly psychological literature is largely limited because Muslim Americans tend to be ignored in psychological literature, as are other minority groups in North America.

Generally, this research is meant to delineate an individual's behavior in the acceptance of his destiny regarding his locus of control, and how that influences mental health. Specifically, the objective is to illustrate how psychological flexibility, locus of control, and mental health can

be connected in a positive way. Connections between psychological flexibility and good mental health have previously been found (Flaxman & Bond, 2010). Specifically, acceptance and commitment therapy was found to reduce pain intensity, depression, and anxiety, and increase physical health and quality of life (Veehof, Oskam, Schrurs, & Bohlmeijer, 2011).

Internal control attributions have been linked with better emotional health, whereas external control attributions have been linked with distress and depression (Frank & Elliott, 1989; Frank et al., 1987; Schulz & Decker, 1985). The purpose of this study will be to express the combination of psychological flexibility, locus of control, and mental health and their overall positive interaction effects.

The study will examine how locus of control and psychological flexibility are related to the mental health of Muslims. The concern is understanding how people can be flexible and whether they will use internal or external loci of control when exposed to negative events. This study is based on the theory underlying Acceptance and commitment therapy, which assumes that acceptance than avoidance of adverse events is healthy, such that individuals move from an initial internal to a later external locus of control (Hayes et al., 2016). These constructs have been widely studied among western cultures but not as much within collectivistic societies.

Research Questions

RQ1: How are demographic variables related to locus of control, psychological flexibility, and mental health among Muslims?

RQ2: What is the relationship between psychological flexibility and mental health among Muslims?

RQ3: What is the relationship between locus of control and mental health among Muslims?

RQ4: What are the relationships between psychological flexibility, locus of control, and total mental health?

RQ5: Are the factors of the Acceptance and Action Questionnaire confirmed within the Muslim population?

RQ6: Are the factors of the Multidimensional Health Locus of Control confirmed within the Muslim population?

Importance, Justification, and Scope of the Study

The prevalence of mental illness in the world should encourage researchers to enlarge mental health studies. People around the world are suffering from mental illness because of exposure to daily stress and anxiety arising from work, school, and home, major trauma; physical and sexual abuse**,** chronic pain, life pressures, vacuity. Daily stress accompanies depressed moods (Dixon & Overall, 2016). When people are exposed to any kind of pressure, they deal with their difficulties in different ways, and can increase their problems by negative thinking and behaviors. The underlying reason some people have difficulties preventing unwanted, negative thoughts is unknown (Hirsch, Hayes, & Mathews, 2009).

Muslims in the U.S. are exposed to unique pressures. After the terrorist attacks on September 11, 2001, some Muslim populations were exposed to discrimination, violence, and prejudice (Abu-Ras & Abu-Bader, 2008). Muslims continue to have many problems such as discrimination and hate crimes (Amer & Bagasra, 2013). The news about terrorism affects prejudice against Muslims with a rise in suspicion regarding their everyday lives (Das, Bushman, Bezemer, Kerkhof & Vermeulen, 2009).

Literature investigating Muslims is limited; therefore, the researcher wants to study Muslim thoughts and behaviors and how they deal with different events, especially negative

events. The Muslim population is growing, accounting for an estimated 3.3 million Americans and 1.8 billion worldwide (Pew Research, 2015).

The World Health Association (2015) estimates that one in five Americans and one in four people worldwide suffer from mental disorders. This estimate seems to be across faith groups and nationalities. Since Muslims have the same mental maladies as others, the increase in their worldwide presence shows the need to understand how best to serve this population with appropriate mental health services. Since the literature regarding Muslim mental health is so limited, there is an urgent need to study this segment of the population. Studies could be helpful to therapists and other mental health professionals as they deal with the Muslim population in general and counsel them specifically, understanding the client "as an individual and not as a stereotype of the Muslim community" (Ibrahim & Dykeman, 2011, p. 393).

Limitations of the Study

The first limitation of the study is that the mental health literature among Muslims is limited, so there is a lack of empirical guidance. The second limitation is that the sample is not representative of all Muslims around the world. A third limitation is that the sample size is not large enough to generalize the results, which is a difficulty of the small population available from which to draw the sample. The fourth limitation is social desirability that affects the study result. The participants may not choose what actually represents them, but they may choose what represents their religious idealism.

Definition of Key Terms

A. Acceptance: "As an alternative to experiential avoidance. Acceptance involves the active and aware embrace of those private events occasioned by one's history without

unnecessary attempts to change the frequency or form, especially when doing so would cause psychological harm" (Hayes et al., 2006, p.7).

B. Cognitive fusion: "Participants are instructed to just notice what the mind says, without attempting to communicate with it, and to behave as they choose, regardless of what their mind says" (Bach & Hayes, 2002, p.1131)

C. Cognitive defusion: "A technique that attempts to alter the undesirable function of thoughts and other private events, rather than trying to alter their form, frequency or situational sensitivity" (Hayes et al., 2006, p.8).

D. Committed action: "ACT [acceptance and commitment therapy] encourages the development of ever larger patterns of effective action linked to chosen values. In this regard, acceptance and commitment therapy looks very much like traditional behavior therapy, and almost any behaviorally coherent behavior change method can be fitted into an ACT protocol, including exposure, skills acquisition, shaping methods, goal setting, and the like" (Hayes et al., 2006, p. 9).

E. Contact with present moment: "Fully conscious as a human being and persisting or changing behavior in the service of chosen values" (Hayes et al., 2006, p. 9).

F. External Locus of Control: "The belief that events in one's life are outcomes of external factors (e.g., fate, luck, other people) and are therefore beyond one's control" (Buddelmeyer & Powdthavee, 2016, p. 88)

G. Internal Locus of Control: "The belief that much of what happens in life stems from one's own actions" (Buddelmeyer & Powdthavee, 2016, p. 88).

H. Islam: "The word Islam comes from the Arabic root word salaam ("peace") and literally translates from Arabic to English as "surrender." Islam denotes the religion, and Muslim

literally translates as 'one who submits to the will of Allah' and denotes a follower of Islam" (Ali, Liu & Humedian, 2004, p. 636). Islam is the fastest growing religion in the world (Ali et al., 2004). There were about 3.3 million Muslims of all ages living in the United States in 2015 (Mohamed & Mohamed, 2016). This means that Muslims made up about 1% of the total U.S. population (about 322 million people in 2015), and that share is predicted to double by 2050 (Mohamed & Mohamed, 2016).

I. Locus of control: Locus of control is the individual belief on how to react and control the environment to which he is going to be exposed (Rotter, 1966).

J. Mecca: The holiest Muslim city in the world, also it is the birthplace of Prophet Muhammed. It is located in the Kingdom of Saudi Arabia. Mecca has Masjid Al-Haram, the largest and holiest mosque in the world for Muslims. Every year, millions of Muslims visiting Mecca to perform their worshiping (Abdalati, 1998).

K. Mental health: "Mental health is defined as a state of health in which every individual realizes his or her own potential, can cope with the normal stresses of life, can work productively and fruitfully, and is able to make a contribution to his/her community" (World Health Organization, 2017a).

L. Ramadan: It is the ninth month of the Islamic calendar. Ramadan is the holiest month for Muslims because in this month the holy Quran was revealed. In addition, one particular night in Ramadan is worth a thousand months because in this night Muslims gain more rewards from Allah for worshiping him (Ali et al., 2004).

M. Spirituality: an individual's thoughts, feelings, and behaviors related to a research of their relationship to God, higher powers, or transcendent reality (Zinnbauer& Pargament,

2005). Some researchers use spirituality and religiosity mutually; in contrast, others prefer to distinguish between the two (Hill et al., 2000; Tisdell, 2003).

N. Spirituality of Muslims: In Islam, there is no differentiation between religion and spirituality since there is no separation between thoughts and action (Nasr 1987). The foundation for spirituality in Islam is based on three concepts: Islam, 'surrender'; Iman, 'faith'; and Ihsan, 'virtue' (Nasr 1981). "Islam refers, first, to those outward forms and practices to which the faithful Muslim must conform to be in fellowship with God (Allah). Iman is the belief in the Unseen that is, believing what Allah the Invisible One has taught as contained in the Qu'ran. Ihsan is the paradox of worshipping Allah as if Allah has become visible" (Ahmad, Muhammad, & Abdulla, 2011, p. 38).

"Islamic spirituality is an implicit construct which can be measured crudely through its manifestations and expressions which include self-discipline, God consciousness (feeling of connectedness with Allah), knowledge (quest and search for divinity), beliefs, morality, responsibilities and obligations enjoined on every Muslim, and Islamic practices" (Dasti & Sitwat, 2014, p. 51).

Chapter II

Review of the Literature

This study will focus on how locus of control is related to psychological flexibility and how these variables related the health of Muslims' mental health.

Dimensions of Mental Health

Mental health statistics worldwide show that 450 million people suffer from either a mental or a behavioral disorder (World Health Organization, 2017a). The prevalence of mental illness in the U.S. shows approximately 1 in 5 adults experience mental illness in any given year, and 1 in 25 adults experience a serious mental illness that substantially interferes with or limits one or more major activities. About 13% of children ages 8-15 and over 20% of teenagers aged 13-18 have experienced a severe mental disorder at some point during their lives (National Alliance on Mental Illness [NAMI], 2015). Among adults in the U.S., 1.1% live with schizophrenia; 2.6% live with bipolar disorder; 6.9% had at least one major depressive episode in the past year, and 18.1% experienced an anxiety disorder such as posttraumatic stress disorder, obsessive-compulsive disorder and/or a specific phobia (NAMI, 2015). Among the 20.2 million adults in the U.S. who experienced a substance use disorder, 50.5% had a co-occurring mental illness (NAMI, 2015).

Mental illness has spread around the world as people are exposed to daily stressors at work, school, or home, major traumas, physical and sexual abuse, chronic pain, and other challenges. Daily stress accompanies increased daily depressed moods (Dixon & Overall, 2016). When individuals are exposed to any kind of pressure, they deal with their difficulties in different ways, some of them unhealthy. Subsequently, an individual can increase their problems via negative thinking and behaviors. Currently, the reasons some people are more susceptible to

unhealthy coping behaviors remains unknown (Hirsch et al., 2009). Less satisfaction in life can be the root cause of many illnesses, both physical and mental. Swami et al. (2006) mentioned that feeling lonely can also lead to higher levels of depression.

This study will measure mental health the using Patient-reported Outcomes Measurement Information System (PROMIS-57) that measures seven dimensions of mental health: anxiety, depression, physical function, pain interference and intensity, fatigue, sleep disturbance, and satisfaction with social roles (Lanting, Saffer, Koehle, & Iverson, 2013).

Anxiety. Anxiety is normal tension that comes as a feeling of being threatened by the presence of risk; such risk may exist or be imagined. The most common mental health illnesses in the U.S. are anxiety disorders, which affect 18% of the population over age 18 (NIMH, 2015). General anxiety disorders affect 3.1% of the U.S. population in any given year, and women are twice as likely to be affected (Kessler, Walters, & Wittchen, 2004). A primary symptom of general anxiety disorder is unaccountable worrying (Borkovec, Alcaine, & Behar, 2004). People suffering from this disorder cannot control their worrying about something that may or may not happen in their lives. Anxiety can result in exposure to the events of life, some normal, some extraordinary. For instance, people waiting for a test result, approval for a promotion at their job, those in a war zone, or those suffering environmental trauma (hurricane, earthquake, wildfire, etc.).

Stress is related to anxiety, and occurs when the brain and body respond to significant levels of pressure. Cândea, Cotet, Stefan, Valenas and Szentagotai-tatar (2015) defined stress as being "conceptualized as a general state defined by difficulty relaxing, nervous arousal, feelings of being easily upset/agitated, irritable/over-reactive or impatient" (p. 180). Positive stressors stimulate an individual to do something positive and healthy. Negative stressors disturb people,

keeping them from continuing their work. Stress can come from negative thoughts that an individual has regarding overwhelming responsibilities. Stress is a top health concern for teenagers in the United States between grades 9-12 (American Psychological Association, 2004). Mindfulness can help teens manage stress (Ciesla, Reilly, Dickson, Emanuel, & Updegraff, 2012).

Depression. Depression is losing of interest in pleasurable things, sometimes resulting in lowering an individuals' self-worth. Depression has a negative effect on peoples' daily lives; for instance, it can affect eating and sleeping. The World Health Organization (2017a) states that "Depression results from a complex interaction of social, psychological, and biological factors. People who have gone through adverse life events (e.g., unemployment, bereavement, psychological trauma) are more likely to develop depression" (n.p.). Major depression is common and expensive to treat and is associated with significant morbidity and suicide (Sullivan, Neale, & Kendler, 2000).

Physical function, fatigue, and pain. Physical function is the ability to move while acting without limitations in the course of daily life; it is one of the main factors of overall health. An individual's physical performance reflects overall health, as the World Health Organization (2017b) defined physical activity as "any bodily movement produced by skeletal muscles that requires energy expenditure" (n.p.) Physical function can be affected by several chronic diseases, such as arthritis, osteoporosis and coronary heart disease. Freedom of movement, strength, balance and mobility are factors to consider in assessing an individual's ability to function physically.

Fatigue is the lack of energy and motivation either physically or mentally, and clients usually describe fatigue as being tired or exhausted (Shen, Barbera, & Shapiro, 2016).

Symptoms of fatigue can be found in patients with anemia, diabetes mellitus, thyroid disease, heart disease, and sleep disorder. Fatigue is a very common complaint, and it is most important to determine if this is a symptom of an underlying disease by doing a complete physical examination and workup (Shen et al., 2016).

Sleep disturbances include difficulty falling asleep, waking up too early, or waking repeatedly during the night. Sleep disturbances afflict millions of Americans across all demographic groups. An estimated 50 to 70 million Americans suffer from a chronic sleep or circadian disorder (National Center on Sleep Disorders Research, 2011). Nearly one out of five adults are affected by chronic insomnia, which is a risk factor for depression, substance abuse, and impaired waking function; co-morbid physical illnesses (e.g., cardiopulmonary disease, chronic pain) and/or mental illnesses (e.g., depression, anxiety) and may be exacerbated by insomnia (National Center on Sleep Disorders Research, 2011). Ability to participate in social roles and activities is the capability to perform one's usual social role, activities of daily living, plus communicate and interact with others (PROMIS Scoring Guide, 2016).

Pain interference is the "consequences of pain on relevant aspects of one's life. This includes the extent to which pain hinders engagement with social, cognitive, emotional, physical, and recreational activities" (PROMIS Scoring Guide, 2016). Arola, Nicholls, Mallen, and Thomas (2010) found that there is a positive relationship between baseline pain interference, depression and anxiety at three-year follow-up examinations. Pain intensity is "how much a person hurts. Patients are usually able to provide quantitative pain intensity estimates relatively quickly" (PROMIS Scoring Guide, 2016).

Locus of Control

Internal and external locus of control describe how individuals understand personal power and direction over outcomes in life. Internal locus of control is the personal perception of using one's own skills and strengths to control one's destiny. External locus of control is the perception of being environmentally bounded, for instance, fate and the existence of powerful others (Lachman, 2006). Bond and Bunce (2003) found that a greater external locus of control predicted higher levels of poor mental health one year later, among a sample of 412 participants. Interestingly, this study also found that, when controlling for locus of control, psychological flexibility was a strong predictor of good mental health (Bond & Bunce, 2003).

Culture is an important factor that affects locus of control. In a recent meta-analysis, Cheng, Cheung, Chio, and Chan (2013) found that the relationship between locus of control and psychological symptoms differed among cultures with distinct individualist orientations, and that locus of control with depression and anxiety symptoms yielded different patterns of cultural findings. Using 152 independent samples comprised of 33,224 adults across 18 cultural regions, Cheng et al. (2013) found support for the existence of the cultural relativity hypothesis by disclosing the effects of individualism on the relationship between anxiety and external locus of control. No effect was found on the external locus of control in a depression relationship. Cheng et al. (2013) stated that "cultural differences are psychologically meaningful because they can be explained by cultural variations on the emphasis on a genetic goal" (p. 173).

In a related study, Johnson, Rosen, Chang, & Lin, (2015) found that "Locus of control is more heavily dependent on evaluations of the environment compared with other traits" (p. 1569). The relationship between an individual and the environment is different from person to person. Those with a strong internal locus of control have faith that the environment responds to their

personal business. However, those with a strong external locus of control see the environment as uncontrollable.

Locus of control is influenced by culture and race, so people are diverse in their thoughts, feelings, and behaviors (Spector, 1982). Locus of control has a complex relationship to religion because religiosity increases external locus of control, and a reliance on God might improve one's sense of internal locus of control (Pargament & Hahn, 1986). Pargament and Hahn (1986) conducted a study to examine how attribution to God integrated into attempts to maintain meaningful views of the world and to cope with the world. The sample was 124 undergraduate students who presented with four health-related situations describing responsible or irresponsible behaviors followed by positive and negative outcomes. Students then responded to causal and coping attribution items. The study results showed that people depend upon God when they go through difficulties times, so they asked for help to cope with their stressors more than do their worshiping as moral activities (Pargament & Hahn, 1986). Powerful others can be further divided into human and divine categories. In a recent study of depression among elderly Iranians, Aflakseir and Mohammad-Abadi (2016) interestingly found that a God external locus of control was similarly beneficial to mental health as an internal locus of control, while powerful human others remained detrimental to mental health.

Previous studies have shown that a high internal locus of control is linked to positive health habits. After the diagnosis of a mental illness, a high internal locus of control helps to amend psychological outcomes (Park & Gaffey, 2007; Stewart & Yuen, 2011). A high internal locus of control relates to increased functioning and increased mental health (Cheng et al., 2013). It is important to note, however, that those extremely high or low in external or internal locus of control are nonrealistic, whereas individuals in the middle of the distributions are more confident

than individuals at the extreme of the distributions (Rotter, 1966). Elfström and Kreuter (2006) found that internal locus of control is related to acceptance coping and fighting spirit; thus, internal control leads to better emotional health. External locus of control was related to social reliance coping; thus, external control is related to distress and depression.

Helgeson (1992) conducted a study on 80 first-cardiac-event patients to examine how perceived control is related to better adjustment. The patients were perceived-control during hospitalization, and their adjustment was assessed during hospitalization and a three-month follow-up period. The study results indicated that perceptions of indirect control were related to better adjustment only for patients who had gone through invasive procedures by physicians. In addition, high internal health locus of control is concerned with better adjustment to their illness for three months.

Internal locus of control is also important in helping patients adjust to their illness, which is especially true for patients with chronic disease (Cvengros, Christensen, & Lawton, 2005). Brown et al. (2015) conducted a study to evaluate whether an individual locus of control predicts various quality of life and mental health measures. The authors wanted to identify a purpose that might enhance the overall spiritual health and quality of life of ovarian cancer patients. This study was a multi-site analysis of 104 women with newly diagnosed stage II-IV ovarian, primary peritoneal or fallopian tube cancer. After completing various surveys and adjustments for site, race, and partnership status, the authors found that high levels of external locus of control predicted decreased quality of life and hope, and were correlated with increased death anxiety and general anxiety (Brown et al., 2015). The authors concluded that "early identification of individuals with higher levels of external locus of control has the potential to improve the quality of life and decrease the anxiety experienced by these patients" (Brown et al., 2015, p. 391).

Holder and Levi (1988) conducted a study on 166 college students to examine the relationship between locus of control and psychological distress. The authors did a correlation study using SCL-90-R depression and anxiety subscales, and Levenson's (1981) Internal, Powerful Others, and Chance locus of control scales. The locus of control scales were correlated with the depression and anxiety subscale scores. Higher SCL-90-R scores were correlated positively with the belief that life was controlled externally by chance and powerful others. On the other hand, SCL-90-R scores correlated negatively with the internal locus of control scale, indicating that those with a stronger internal locus of control had less psychological distress (Holder & Levi, 1988).

April et al. (2012) investigated the effect of locus of control on leadership qualities and the level of happiness of individuals. The study collected survey data from 140 participants. The first survey was an online, self-administrated questionnaire to test leadership, the second survey was an internal-external scale questionnaire, and the third survey was self-reported to measure subjective health. As a secondary research approach, participants' self-reflection was to add personal expression to discussion of the quantitative result. The significant research result was that maximum levels of happiness are achieved by individuals with bi-local expectancy. Bi-local expectancy is a balanced locus of control expectancy, which is a mix of internal and external locus of control.

In another study, Janowski, Kurpas, Kusz, Mroczek and Jedynak (2013) had a desire to determine health-related behaviors using a profile of health locus of control. The authors also wanted to assess the relationships between these constructs among patients suffering from chronic somatic diseases. The study was on 300 adult patients suffering from various chronic diseases. The authors found no statistically significant differences between each of the clinical

groups in health-related behavior, acceptance of illness, internal or external health locus of control. In addition, there is a significant positive relationship between health-related behavior and all three categories of health loci of control (internal, powerful others and chance), with the highest correlation coefficients for powerful others locus of control.

All three categories of health locus of control are related to mental health, thus the study found that there is a relationship between internal control and better emotional health, while there is a relationship between external control and distress and depression (Frank & Elliott, 1989; Schulz & Decker, 1985). Locus of control has good outcomes on health and behaviors, as some studies have expounded positive relationships between strong internal locus of control and better cognitive and physical health outcomes (Lachman, 2006; Infurna, Gerstorf, Ram, Schupp, & Wagner, 2011).

Burns and Mahalik (2006) were investigating the moderating effects of physical health and scripts for masculinity on the relationship between powerful other people locus of control and mental health. The authors did a regression analysis on 230 men treated for prostate cancer. The result was that powerful other people locus of control as in family, friends, and peers is an important resource for men with prostate cancer. Powerful other locus of control offers good support for men with prostate cancer to recover from treatment, plus it helps them to cope with having the disease. On the other hand, powerful other locus of control was unable to control some men with prostate cancer; however, they were able to cope independently. Many studies have been found to support the fact that internal and external dimensions are comparatively independent (Levenson, 1981; Parkes, 1985).

Buckelew et al. (1990) conducted a study of locus of control in male and female patients with persistent pain. They found that younger men had a stronger internal locus of control

compared to older males, and that older men relied more on both chance and powerful other external loci of control. Among female patients, no age differences were found; however, locus of control was correlated with coping strategy. Women with only internal locus of control were more likely to cope with their persistent pain by using information-seeking, self-blame, and threat minimization. Interestingly, the combination of internal and powerful others external loci of control was associated with less frequent use of cognitive self-management coping.

Acceptance and Commitment Therapy

Behavioral therapy has evolved over decades and can be divided into three generations. The first generation is traditional behavior therapy founded on social learning theory described by Bandura (1977). First generation behavior therapy is based on operant and classical conditioning principles. The second generation—cognitive behavior therapy—was created when empirical clinicians discovered the needs of thought and feeling as they explored the cognition of the individual (Beck, Rush, Shaw, & Emery, 1979). Cognitive behavior therapy places less emphasis on strict behaviorist theory and greater emphasis on cognitive theory (Hayes, 2004). The goal of cognitive behavior therapy is to change clients' cognitions to help them change behaviors.

The third and most recent generation of therapy focuses on acceptance and mindfulness (Hayes, 2004). This includes contextual behavior analysis (Hayes, 1993), relational frame theory (Hayes, Barnes-Holmes, & Roche, 2001), and acceptance and commitment therapy (Hayes et al., 2016). Acceptance and commitment therapy is similar to the existential approach in freedom and choice factors plus meaning and values factors; however, the roots of these approaches differ (Ramsey-Wade, 2015). Acceptance and commitment therapy uses mindfulness, acceptance, and cognitive defusion skills to increase psychological flexibility and encourage clients to change

their behaviors in the direction of their chosen values (Arch & Craske, 2008; Hayes et al., 2016). The six core characteristics of acceptance and commitment therapy are: (1) contact with the present moment, (2) acceptance, (3) values, (4) cognitive defusion, (5) committed action, and (6) self as context (Hayes et al., 2006). "Acceptance involves the active and aware embrace of those private events occasioned by one's history without unnecessary attempts to change the frequency or form, especially when doing so would cause psychological harm" (Hayes et al., 2006, p. 7).

Acceptance of illness is a psychological signal of the quality of life because the patient can adapt to his life with disease (Lewko et al., 2007). Conversely, acceptance of illness could be a negative signal, because Janowski et al. (2013) found a negative relationship between acceptance of illness and health-related behavior. Acceptance involves the therapist helping clients change their relationships to their experiences more than the content or frequency of particular thoughts or feelings (Hayes, Villatte, Levin, & Hildebrandt, 2011). Gutiérrez, Luciano, Rodríguez, and Fink (2004) found that acceptance therapy increased pain tolerance to a greater extent than a cognitive-control-based protocol that stressed an internal locus of control. Interestingly, the cognitive therapy group reported a greater reduction in measures of pain, but did not increase pain tolerance. When given a task while receiving progressively more intense shocks, the cognitive therapy group stopped the task when they reached "very much pain" while the acceptance therapy group continued the task (Gutiérrez et al., 2004).

Cognitive defusion is an indirect way of observing the perspective of internal experiences; for instance, negative thoughts—putting a distance between actual events and verbal evaluation of thoughts (Bloy, Oliver & Morris, 2011). Hayes et al. (2006) believed that acceptance and commitment therapy treatments help people accept and defuse detrimental thoughts, which is more useful than trying to discourage them from actually having these

thoughts. Acceptance and commitment therapy reduces the rate of hospitalization over four months. In one study, four sessions of an individual acceptance intervention helped 50% of a relatively chronic group of hospitalized patients to experience positive symptoms of psychosis (Bach & Hayes, 2002). Recently, Thekiso et al. (2015) found acceptance and commitment therapy interventions could help patients with alcohol use disorder to reduce their abuse of alcohol. Acceptance has been found to be a useful therapy for those with depression and alcohol abuse disorder (Buessing, Matthiessen, & Mundle, 2008).

Psychological flexibility. Flaxman and Bunce (2008) defined psychological flexibility as an ability to focus on the present moment and depend on what the circumstances provide. Atkins and Parker (2012) stated that "psychological flexibility is not only about one's relationship to inner experiences but involves purposeful action motivated by values and goals" (p. 530). Bach and Hayes (2002) noted that it was hard for people to focus on the present moment when they are distracted by avoidance, suppression, and controlling thoughts, feelings, or memories. Psychological inflexibility can occur with exposure to trauma, grief, or abuse (Hayes, Luoma, Bond, Masuda & Lillis, 2006). Psychological inflexibility consists of six cores: "experiential avoidance, lack of values, weak self-knowledge, cognitive fusion, avoidance persistence, and attachment to conceptualized self" (Hayes et al., 2006, p. 6). Experiential avoidance is a natural behavior that makes a person feel good and avoid pain, and occurs "when a person is unwilling to remain in contact with particular private experiences (e.g., bodily sensations, emotions, thoughts, memories, behavioral predispositions) and takes steps to alter the form or frequency of these events and the contexts that occasion them" (Hayes, Wilson, Gifford, Follette, & Strosahl, 1996, p. 1154). When a person is exposed to high levels of experiential avoidance, the person can be readily fused with thoughts; this behavior prevents the brain from being in contact with

the present moment (Boly, Oliver, & Morris, 2011). For example, patients with general anxiety disorder avoid the experience of their weaknesses, thereby preventing negative events (Flückiger, Zinbarg, Znoj, & Ackert, 2014).

A positive relationship exists between psychological flexibility and mental health (Flaxman & Bond, 2010; Kashdan & Rottenberg, 2010). People with higher psychological flexibility are more effective in goal-related opportunities, have less emotional distribution, and are more likely to achieve their goals (Bond et al., 2008). Bond et al. (2008) conducted a quasi-experimental study to examine the degree to which psychological flexibility influenced or moderated the effects of a control-enhancing participative action research intervention had on mental health, absence rates, and employee motivation among 312 people across two service centers. Those with higher levels of flexibility are better able to notice and respond effectively to subtle changes in performance criteria on a computerized task (Bond et al., 2008). Although the high correlations suggested that the self-report measures assessed the same constructs, the authors nevertheless concluded that psychological flexibility is strongly associated with mental health and moderately associated with job control (Bond et al., 2008).

Bluett, Homan, Morrison, Levin and Twohig (2014) did a meta-analytic review of 63 studies to examine the relationship between the core acceptance and commitment therapy process of change (i.e., psychological flexibility) and anxiety symptomatology. The aim of this review was to synthesize the current state of the research on acceptance and commitment therapy for anxiety and obsessive-compulsive spectrum disorders. Bluett et al. (2014) found a correlation between the psychological inflexibility measured with the Acceptance and Action Questionnaire-II and measures of anxiety (r =.45, p < .001), and a stronger correlation between psychological inflexibility and general anxiety disorder (r =.61, p < .001). Accordingly, there were significant

and positive relationships between the psychological inflexibility and general measures of anxiety and specific measures of disorder severity (obsessive compulsive disorder and related spectrum disorders, and social phobia). Currently, Bluett et al. (2014) reported use of a unified acceptance and commitment therapy protocol in treatment of mixed anxiety disorder, but not for treatment of post-traumatic stress disorder (PTSD), panic disorder, or simple phobias.

Brinkborg, Michanek, Hesser, and Berglund (2011) conducted a study on 106 social workers to examine the effect of a brief stress management intervention based on the behavioral principles of acceptance and commitment therapy. Those who received acceptance and commitment therapy had a statistically significant lower level of perceived stress post-treatment than the control group. Also, the therapy group had statistically significantly lower general mental health problems post-treatment than the control group.

Alonso, López, Losada, and González (2013) found that group psychological intervention is beneficial in people over 65 years of age who suffer chronic pain. Acceptance and commitment therapy supports the elderly in accepting their pain, which helps them achieve better emotional health. This intervention leads to increased life satisfaction for the elderly who suffer from chronic pain. Acceptance-based intervention such as mindfulness-based stress reduction programs are good substitutes for cognitive behavioral therapy in the treatment of chronic pain (Veehof et al., 2011). Psychotherapy might be the best treatment for advanced cancer patients. This encourages acceptance of distressing internal or personal events, as in cognition, memories, and sensation (Angiola & Bowen, 2012). In addition, psychotherapy helps the patient to command values and meaning in their life in the short term.

One acceptance-based intervention is mindfulness (Bloy et al., 2011). In mindfulness exercises, the client is asked to shut his/her eyes and use all five senses to distract paranoid

thoughts. This technique helps clients notice self-talk and internal experiences, thereby stimulating a mindful relationship with these processes. When clients are aware of their thoughts, they can create a distance between negative thoughts and distressing, anxious thoughts. Bach and Hayes (2002) discussed psychological intervention, which is how a therapist can change clients' behaviors without challenging them. This technique teaches patients that acceptance and mindfulness will defuse internal sources of distress. Acceptance and commitment therapists encourage clients to be aware of and decrease unhealthy conflicts with psychological content, and to develop an accepting attitude to be able to move in a valued direction (Boly et al., 2011).

Religious Coping

Religious coping can be highly therapeutic to those suffering physical or mental illness (Pargament & Hahn, 1986). In fact, those with severe mental illness such as schizophrenia have been found to greatly benefit from religious coping (Tepper, Rogers, Coleman, & Malony, 2001). Karekla and Constantinou (2010) examined how cancer patients return to religious or spiritual beliefs to cope with illness. In this paper, the authors presented acceptance and commitment therapy as a spiritually and religiously sensitive treatment. The goal of acceptance and commitment therapy is to explore a person's values, then help the person accept any experience over which he has no control. After that, the person must commit and take actions consistent with his values. That means the person must be flexible and open to a variety of religion or spirituality means of coping, allowing himself to explore spirituality. Karekla and Constantinou (2010) discussed the case of a cancer patient who suffered over a long period of time. Although fearful, the patient was able to explore her emotions and experimental avoidance with acceptance and commitment therapy treatment. During processing, the patient accepted her situation, gained an understanding that this experience was beyond her control.

Ellis, Thomlinson, Gemmill, and Harris (2012) did a multicenter observation study of 326 inpatients admitted by primary care physicians to four Midwestern hospitals, and determined how often patients identified spiritual concerns during hospitalization. They found that the religion/spirituality group had significantly higher religious coping composite scores than those who had no religious or spiritual issues/questions. Religious coping results were related to several significant variables of interest. In particular, the subscale scores were weakly related to measures of intrinsic religiosity ($r = .36$, $p < .001$), extrinsic religiosity ($r = .40$; $p < .001$), self-reported spirituality ($r = .47$; $p < .001$), perceived severity of illness ($r = .12$; $p < .001$, and high degree of perceived social support ($r = .249$; $p < .001$). In addition, patients used various external support sources for spiritual or religious issues, including visits from hospital chaplains, priests, members of patients' own faith communities, and family members. This study enhances the idea that spirituality and religion are what patients need during acute illnesses (Ellis et al., 2012). In another study on religious coping, turning to God was the intervention that helped hemodialysis patients adapt the most to their physical and psychosocial difficulties (Burns, 2004).

Galek et al. (2015) conducted a nationwide study on 1453 adults to examine the relationship between religious commitment, belief in meaning/purpose of life, and psychiatric symptoms. The study results supported the previous research findings that religious commitment has a good relationship with psychological health. Religious commitment has a negative relationship with general anxiety, social anxiety, paranoia, obsession, and compulsion. These results were consistent with prior research that meaning and purpose in life have a healthy association with psychological health. Lack of meaning and purpose have been related to psychiatric symptomology.

The complete reliance on God might affect health negatively, as Bourjolly (1998) found that complete reliance on God with respect to health suggests that this may lead to decreased screening and treatment-seeking behaviors. Based on many findings, various studies recommend internal locus of control as a good motivation for an individual. Some evidence supports the theory that people with an internal locus of control who consider God as a collaborative partner in their lives have better coping and problem-solving abilities compared to those who deny the effects of God in their lives (Pargament et al., 1988).

Islam

The religion of Islam was founded in the 7th century when the first words of the Holy Qur'an were revealed to Prophet Muhammed ibn Abduallah (Ali et al., 2004). Muhammed was an Arab businessman in the city of Mecca who meditated in a cave in the Mountain of Hira. On the 17th of Ramadan 610 A.D, the angel Gabriel brought the first of 6,340 verses of the Qur'an to the prophet Muhammed while he was meditating in the cave. Gabriel continued to bring the messages of Allah to Muhammed, and he in turn preached to the people of Arabia until his death in 632 A.D (Ali et al., 2004).

There are five pillars of Islam that every Muslim must follow to worship Allah. The first pillar is the verbal acclamation, "There is no god but Allah, and Muhammad is Allah's Messenger," the second pillar is to pray five times a day to Allah, the third pillar is fasting during the month of Ramadan, the fourth pillar is to give to charity, and the fifth pillar is to make the pilgrimage to Mecca if able (Abdalati, 1998).

Muslims believe that mental illness is a test or punishment from Allah (Abu-Ras, Gheith & Cournos, 2008). Muslims strongly believe in destiny as a fatalistic form of their belief in Allah (Shah et al., 2008). Muslims believe that the good things that happen to them are from Allah, and

the bad things that happen to them come from themselves due to their sins; “What good things happen to you are from Allah and what bad things happen to you are from yourself” (Quran 4:80). Good things are graces that Allah give to his believers and bad things come from sins that cause calamities to happen to believers.

Roughly 3.3 million Muslims were living in the U.S. in 2015, comprising about 1% of the total U.S. population (Lipka & Hackett, 2015). Islam is the most recent Abrahamic faith. Muslims believe that it is not possible to recognize the nature of Allah, therefore he sent his messenger by his revelation to teach human beings about the pillars of Islam and how to worship Allah (Abdalati, 1998). The word *Allah* comes from the Arabic compound *al-ilah,* meaning “the one God,” and Islam is an Arabic root word *Slaam,* which means peace (Ali et al., 2004).

Islam encourages the use of both internal and external loci of control. Muslims believe in fate and destiny as willed by Allah, which encourages an external locus of control. Muslims are directed to “rely upon Allah. And sufficient is Allah as Disposer of affairs” (Quran 4:82). However, an internal locus of control is also encouraged, as Muslims are directed to work and worship Allah of their own free will; “And those who believed and whose descendants followed them in faith–We will join with them and their descendants, and we will not deprive them of anything of their deeds. Every person, for what he earned, is retained” (Quran 52:22), and “Work, and Allah will surely see your work and also His Messenger and the believers. And you shall be brought back to Him who knows the unseen and the seen; then He will tell you what you used to do” (Quran 9:105).

Muslims believe that Allah chose the best things for his believers, at the same time no one can know his fate; “Nothing shall reach us, but what Allah has ordained for us. He is our Protector, and the Muslims should keep trust in Allah only” (Quran 9:51) and “If Allah should

aid you, no one can overcome you; but if He should forsake you, who is there that can aid you after Him? And upon Allah let believers rely" (Quran 3:161). In the U.S., Muslims generally conceptualize mental illness in the same manner as Westerners, although with a slightly greater tendency to attribute mental illnesses to supernatural causes (Bagasra & Mackinem, 2014).

Islam and mental health. In a recent review of quantitative research on mental health and religion, Koenig, Al Zaben, and Khalifa (2012) found that the associations between religious involvement and mental health were similar worldwide, whether in majority Muslim or Christian countries. In another study of colorectal cancer patients in Saudi Arabia, Shaheen Al Ahwal, Al Zaben, Sehlo, Khalifa, and Koenig (2015) studied the effects of religious observance on depressive symptoms. All participants engaged in group prayer five times a day, and over 75% never skipped two or more obligatory prayers, over 70% read or recited the Quran several times a week or daily, 80% gave money to the poor each year, over 70% fasted throughout Ramadan, and over 90% reported "definitely" experiencing the presence of Allah, and nearly 75% said their entire approach to life was definitely based on their religious beliefs (Koenig et al, 2016). Koenig et al. (2016) found a strong, inverse relationship between participants' pious religiosity and depressive symptoms and suicidal thoughts. In another study, Babamohamadi et al. (2017) found that one month of listening to daily Quran recitations significantly lowered depressive symptoms among patients with advanced renal failure in Iran.

Summary

Mental health is a critical component of quality of life. Two main factors that contribute to mental health and health are an internal locus of control and psychological flexibility. Acceptance and commitment therapy is one recently developed therapeutic approach that helps people gain greater psychological flexibility and accept circumstances outside of their control.

Acceptance and commitment therapy has been found to be spiritually sensitive, and may be particularly well-suited for treatment among devout Muslims. This study will examine the relationships between locus of control, psychological flexibility, and mental health among Muslims.

Chapter III

Methodology

Introduction

The researcher will discuss the theoretical and methodological framework of the research: epistemology, theoretical perspective, design, and method. In addition, the sampling procedure, data collection, and data analysis processes will be described in detail.

Purpose of the Study

The purpose of this study is to examine the relationship of locus of control, psychological flexibility, and the mental health of Muslims. This study is motivated due to the scarcity of published scientific research in this area. Amer and Bagasra (2013) suggest that the psychological scholarly literature is largely limited because Muslims in America tend to be ignored in psychological literature, as are other minority groups in North America.

This research is a quantitative study using a survey research design. Quantitative research is a method for testing objective theories by analyzing the relationship among variables through various statistical procedures (Creswell, 2009). Babbie (2015) defines quantitative analysis as "the numerical representation and manipulation of observations for the purpose of describing and explaining the phenomena that those observations reflect" (p. 403). Survey research is a way to quantitatively explore attitudes, beliefs, and opinions through the use of questionnaires or scales. Survey research design is most appropriate for this particular study because of the desire to discover Muslims' perceptions and opinions.

In a survey research design, data are collected in several different ways, including surveys or questionnaires. The systematic process of collecting data makes survey research design one of the most important measurements in social science research. The data in survey

research goes directly from the participant to the researcher. Informed participants give information, based on their experience, to the researcher who has an interest in learning this (Sheperis, Yong, & Daniels, 2010). Collected data are analyzed to explore relationships, predictions, and variable influences through different statistical procedures.

Survey research has two design types, longitudinal and cross-sectional designs. The researcher selects one design type based on: (1) the timeframe for collection of data, (2) the researcher's questions of interest, (3) access to participants, and (4) cost. The researcher in this study will use cross-sectional survey design because data will be collected at only one point in time (Sheperis et al., 2010).

The researcher will use IBM SPSS software to analyze the quantitative data that will be gathered. The descriptive statistics to be used in this study include frequency distribution, mean, standard deviation, and correlation. Inferential statistics in this research included analysis of variance (ANOVA), linear regression, and multiple regression. The sample will be convenience—the researcher will collect information from Muslims 18 years of age and older.

The researcher will ask respondents to fill out four scales. The first scale is a demographic questionnaire that was created by the researcher. It is a self-administered instrument to investigate information about participants' basic demographic characteristics. The second scale is the Acceptance and Action Questionnaire–II (AAQ-II), a seven-item measure of psychological inflexibility/experiential avoidance (Bond et al., 2011). The third scale is the Multidimensional Health Locus of Control (MHLC) Scale, which measures three distinct dimensions of loci of control: internality, chance externality, and powerful others externality. Two equivalent forms (A&B) of the MHLC Scales have been developed, each consisting of three six-point Likert-type response options, ranging from strongly disagree to strongly agree

(Wallston, Wallston, & DeVellis, 1978). The fourth scale is the Patient-Reported Outcomes Measurement Information System (PROMIS), which are "highly reliable and precise tests are designed to measure physical, psychological, and social health" (Lanting et al., 2013, p. 1). The PROMIS-57 scales include eight items from seven primary PROMIS domains: depression, anxiety, physical function, pain interference and intensity, fatigue, sleep disturbance, and satisfaction with social roles.

Research Questions

RQ1: How are demographic variables related to locus of control, psychological flexibility, and mental health among Muslims?

RQ2: What is the relationship between psychological flexibility and mental health among Muslims?

RQ3: What is the relationship between locus of control and mental health among Muslims?

RQ4: What are the relationships between psychological flexibility, locus of control, and total mental health?

RQ5: Are the factors of the Acceptance and Action Questionnaire confirmed within the Muslim population?

RQ6: Are the factors of the Multidimensional Health Locus of Control confirmed within the Muslim population?

Theoretical and Methodological Framework

Epistemology is the doctrine or theory of knowing within the social research field has been approached from both objectivism and constructivism perspectives. Objectivism is most predominant in the hard sciences, as they emphasize positivism as the primary philosophical

standpoint. In the positivist paradigm, it is argued that reality exists external to the researcher and must be examined through the precise process of scientific inquiry through measurement, observation, and experimentation (Marshall& Rossman, 2014). This means there is an objective reality.

In the positivist paradigm, quantitative analysis is used to define the data; briefly, the results and conclusions are inferred based on descriptive and inferential statistical analysis. Researchers coming from the constructive perspective still assume that reality exists; however, they suggest that the interpretation of the observer is important to consider as well. Constructivism is a theory of knowledge that supports humans who create knowledge and meaning from a communication between their experiences and their ideas (Piaget, 1970). Under the perspective of constructivism, reality exists; however, it is influenced by the observer or interpreter. This study will be conducted from the constructivist epistemology.

Theoretical Perspective

The theoretical perspective followed in this study is interpretivism, as participants will be sharing their opinions and perceptions regarding locus of control, acceptance and psychological flexibility. The desire to understand how Muslims interpret stressful experiences under the lenses of Islam, the acceptance of destiny and personal responsibility is what gives voice to this quantitative survey research. Using surveys to assess behaviors based on faith allows quantitative researchers to not only see their own perspectives, but also to view it in a different light from the beliefs disclosed by the participants. In deciding the method of research, the researcher is interested in examining the effects of locus of control and psychological flexibility on the mental health of Muslims; thus, the quantitative survey research design is appropriate.

Research Design

This study is a cross-sectional, survey research design using four self-report quantitative questionnaires with a convenience sample of the Muslim population worldwide. Babbie (2015) defined cross-sectional as "involves observations of a sample, or cross section, of a population or phenomenon that are made at one point in time" (p. 106). The quantitative research method is appropriate for this study for the following reasons. First, this method is suited for obtaining reliable data from a large number of sources; second, it enables good researcher objectivity; third is the probability that allows the researcher to generalize the result over large populations (Trochim, Donnelly, & Arora, 2015).

According to Babbie (2015), many social science researchers use this survey method to collect data from large samples over a short time period. A cross-sectional survey research design is appropriate for this study because the researcher wants to collect data from one point in time and to record that information from a cross-section of the study population with no endeavor to manipulate the study's environment.

Data Collection Procedure

The researcher will use a convenient sample of 385 Muslims using Raosoft, a software program to calculate the sample size, to answer the study's research questions.

Sample context. In more than 200 countries, there are 1.6 billion Muslims worldwide (Pew Research, 2015). Based on Muslim population estimates, Islam is the second largest religion after Christianity. Most Muslims are found in the Asia-Pacific region, most notably in Indonesia and India; with the second largest group found in the Middle East-North African region. (Pew Research, 2013). Muslim statistics from 2010 show about three-quarters of the world's Muslims (74.1%) live in the 49 countries in which Muslims make up a majority of the

population. More than a fifth of all Muslims (23.3%) live in non-Muslim-majority countries in the developing world. About 3% of the world's Muslims live in well-developed regions, including Europe, North America, Australia, New Zealand and Japan (Pew Research, 2011). About 3.3 million Muslims live in the U.S. (Pew Research, 2015).

Power analysis. The researcher is using Raosoft, a software program for conducting power analysis, to estimate a priori sample size. Based on information entered to estimate the sample size needed: confidence level $(1 - \beta)$ at 0.95, $\alpha = 0.05$, and normal distribution 50%; therefore, a minimum sample of 385 or more Muslims will be needed for the study.

Recruitment. After receiving the St. Mary's University's Institutional Review Board (IRB) approval for the study, the researcher will be using social network technology and electronic communication to establish the link for an online Qualtrics survey. The researchers sent the invitation to about 500 Muslims over age 18.

Data collection. The researcher used Qualtrics, an internet-based survey questionnaire, to collect data. After receiving IRB approval, the researcher collected data following standard legal and ethical guidelines. Participants were informed about the study, and were allowed to answer survey questions after providing informed consent (Appendix A).

The researcher used social network technology and electronic communication to invite the research participants. Prospective participants received the survey questions by e-mail or by receiving a broadcast link. The link that researcher sent was directed to the participants via a Qualtrics survey in which data can be entered anonymously. Researcher also contacted the Islamic Centre of San Antonio and the Saudi Arabian Cultural Mission to announce the study and help the researcher collect participants' emails. These organizations serve the Muslim community in the U.S. and had direct access to possible participants, thus simplifying the

process of sample determination and data collection. Participants received no financial reward and no compensation for involvement in this study. The survey was distributed to the prospective sample in March 2017.

Participants

Participants in the study were Muslims located worldwide and aged 18 years or above. The initial sample size was 278 from about 500 initial questionnaires issued to participants. After the removal of missing values and accounting for outliers, the sample size used for most of the analysis was reduced to 235.

Measures

Demographic characteristics, mental health, psychological flexibility, and locus of control were measured using four instruments.

Demographic questionnaire. The demographic questionnaire was created by the researcher. It is a self-administered instrument that investigates information regarding the following demographic characteristics: gender, age, marital status, ethnicity, place of residence (by continent), length of residence, and level of spirituality. All data were self-reported via online form (See Appendix B).

Acceptance and Action Questionnaire–II (AAQ-II). The Acceptance and Action Questionnaire-II (AAQ-II) is a seven-item measure of psychological inflexibility/experiential avoidance (Appendix C). AAQ-II is a new version of the acceptance and action questionnaire, published in 2011, and consisting of seven items to measure psychological inflexibility or experiential avoidance (Bond et al., 2011). Scale answers are given on a seven-point scale ranging from 1 = never true to 7 = always true with scores ranging between 10 and 70. High scores on the AAQ-II scale mean more psychological flexibility and low scores mean more

experiential avoidance. AAQ II has been translated into several languages (Cao, Ji, & Zou, 2013).

The researcher chose AAQ-II because it is a unidimensional measure that assesses the construct of psychological inflexibility. There is an immediate need for the AAQ-II because AAQ-I shows insufficient levels of reliability in various populations (Bond et al., 2011). Findings from studies indicate that the reliability of the AAQ-II scores is consistently above the AAQ-I, with a mean alpha coefficient across the six samples of .84 (0.78 - 0.88), and the three-month and 12-month test-retest reliability of 0.81 and 0.79, respectively (Bond et al., 2011). AAQ-II also indicates appropriate discriminate validity.

AAQ-II scores have good reliability and validity; Fledderus, Oude Voshaar, ten Klooster, and Bohlmeijer, (2012) concluded, "The AAQ-II scores showed good internal consistency (Cronbach's α = 0.89) and construct validity as it was associated with pain-related anxiety, depression, and mindfulness" (p. 926). Many studies have investigated AAQ-II and have shown incremental validity in explaining depression, anxiety, positive mental health, psychological distress, quality of daily patient functioning above and beyond acceptance of pain and general mindfulness (McCracken & Zhao O'Brien, 2010; Karekla & Panayiotoua, 2011).

Multidimensional Health Locus of Control (MHLC) Scale-Form A. Multidimensional Health Locus of Control (MHLC) Scale (Wallston et al., 1978) includes several subscales that measure an individual's tendency to believe that health outcomes are due mainly to one's own behavior, to chance or divine power, or to a powerful other like a family member (Appendix D). Three equivalent forms of MHLC are A, B, and C. Form A is used for a healthy population, Form B is used for those who have a chronic illness, and Form C is used for those who have a

specific medical or health-related condition. Each MHLC form consists of three six-item scales and includes 18 items (Wallston et al., 1978).

Scale answers are given on a six-point Likert format ranging from 1 = “strongly disagree” to 6 = “strongly agree”, with scores ranging between 6 and 36. This rating assesses the degree of people who believe which item controls their health. Items 1, 6, 8, 12, 13, and 17 represent internal locus of control; items 2, 4, 9, 11, 15, and 16 represent chance external locus of control; and items 3, 5, 7, 10, 14, and 18 represent powerful others external locus of control.

Determining the truth of the MHLC scale answers can be difficult because, as Wallston (2005) stated, “The evidence for the validity of the MHLC subscales has been modest, but this varies as a function of the particular subscale being used, the appropriateness of the statistical analyses being conducted, and, most particularly, the theoretical contexts in which validity is being examined” (p. 630).

The MHLC scales have been used in hundreds of studies (Wallston, 2005). In general, the results are moderately reliable (Cronbach alphas in the 0.60 - 0.75 range and test-retest stability coefficients ranging from 0.60 - 0.70); however, these reliability estimates can vary due to issues like the particular population being studied (Wallston, 2005).

MHLC has sufficient reliability and validity among the Japanese population. The MHLC scale has good levels of internal consistency (alpha 0.69 for IHLC, 0.76 for PHLC, & 0.62 for CHLC), and the range of Cronbach α of the study was 0.62- 0.76 (Kuwahara, et al., 2004). At the same time, MHLC scale scores were valid in understanding health beliefs among Japanese and helped the authors develop health education programs. (Kuwahara, et al., 2004).

MHLC scores showed acceptable internal consistency, Cronbach’s alpha coefficient was for internal (0.68), for powerful others (0.72), and for chance (0.66) (Moshki, Ghofranipour,

Hajizadeh, & Azadfallah, 2007). Person's moment correlations indicated test-retest reliability was 0.60 for internal, 0.58 for chance, and 0.74 for powerful others subscales of MHCL over a four-week period (Moshki et al., 2007).

Patient-reported Outcomes Measurement Information System (PROMIS-57). Patient-reported Outcomes Measurement Information System (PROMIS) scales have highly reliable and validated scores. These scales are precise tests which are designed to measure physical, psychological, and social health (Appendix E). PROMIS-57 "includes eight items from seven primary PROMIS domains: depression, anxiety, physical function, pain interference (and pain intensity), fatigue, sleep disturbance, and satisfaction with social roles" (Lanting et al., 2013). All PROMIS scales are universal rather than disease-specific. They assess all domains from the past seven days except for physical function, which has no timeframe. PROMIS profile instruments are intended for adults aged 18 years and older (PROMIS Scoring Guide, 2016).

The PROMIS self-reported measures contains eight question domains with items from each primary domain plus the pain intensity item, intensity 0-10 on the numeric testing scale. Each item has five response options ranging in value from 1 to 5, except for pain. For physical function domain, each item has five options given on a five-point Likert format ranging from 1 = "Without any difficulty" to 5 = "Unable to do"; for anxiety domain, each item has five options ranging from 1 = never to 5 = always; for depression domain, each item has five options ranging from 1 = never to 5 = always; for fatigue domain, each item has five options ranging from 1 = not at all to 5 = very much. Sleep Disturbance domain, the first item has five options ranging from (1) = very poor to 5 = very good with the balance of items having five options ranging from 1 = not at all to 5 = very much; for Ability to Participate in Social Roles and Activities domain, each item has five options ranging from 1 = never to 5 = always; and for Pain Interference

domain, each item has five options ranging from 1 = not at all to 5 = very much. For Pain Intensity domain, one item has eleven response options ranging in value from 0 = "no pain" to 10 = "worst imaginable pain".

The internal consistency reliabilities (Cronbach's alpha) of the PROMIS-57 scales were Anxiety = 0.95, Depression = 0.96; Fatigue = 0.96, Pain Interference = 0.96, Physical Functioning = 0.89, Satisfaction with Social Roles = 0.98, and Sleep Disturbance = 0.94 (Lanting et al., 2013). In this sample of medical outpatients, the PROMIS-57 scales had great internal consistency reliability; in addition, The PROMIS Anxiety scale was highly correlated with the Generalized Anxiety Disorder scale (GAD-7). Patient Health Questionnaire (PHQ-9) had an excellent correlation with the PROMIS fatigue scale (r = 0.78), better than with the PROMIS Depression (r = 0.62) and Sleep Disturbance scales (r = 0.62; Lanting et al., 2013).

All correlations between scores on the PROMIS full-item banks and scores on the short forms from each domain were greater than 0.95 (Cella et al., 2010). The authors used t-scores to provide each items' standard error and reliability coefficients; thus, the reliability was high for all bank form scores at the mean to two or more SD units worse than the mean.

The authors used correlation between scores in item banks, item banks short form, and legacy measures to provide construct validity; they found for physical function domain the full bank was correlated at $r = 0.96$ with the short form and $r = 0.80$ to 0.88 with legacy measures (Cella et al., 2010). A correlation was seen between short-form scale of domain and the full-item bank for fatigue domain $r = 0.76$, for pain domain $r = 0.98$, for sleep disturbance $r = 0.96$, and for social health $r = 0.99$ (Cella et al., 2010).

Data Analysis

The researcher will use the IBM Statistical Package for the Social Sciences (SPSS) version 24 in the analysis of the collected data. After checking all returned responses, the information will be entered in the SPSS to calculate descriptive and inferential statistics in order to answer research questions.

Axiology. The researcher followed all standard ethical and legal guidelines during the study. Before data collection, the researcher received St. Mary's University's Institutional Review Board (IRB) approval. All IRB regulations will be followed. The data will be collected anonymously to ensure the confidentiality of participant responses. All participants of this study will be volunteers. The study will be conducted with the permission of both the dissertation chair and the committee members.

Chapter IV

Results

This chapter presents the statistical results of the data analysis. A Qualtrics survey was used to examine in a quantitative method study format the locus of control and psychological flexibility regarding mental health of Muslims. It also examined the relationships between various demographic variables, such as gender, age, ethnicity, marital status, education, spirituality, place and length of residence and locus of control, psychological flexibility, and mental health among Muslims.

This study used a cross-sectional survey research design with four psychometrically well-designed self-report scales to collect data (Babbie, 2015). The assessment of validity and reliability of the instruments used to collect data were determined prior to data analysis. The participants were Muslims worldwide, and the data were collected and analyzed as stated in Chapter III of this dissertation. The aim of this research was to examine the relationship of locus of control, psychological flexibility, and mental health among Muslims. The quantitative data were analyzed using the IBM Statistical Package for the Social Sciences (SPSS) version 24. Descriptive statistics used were frequency of distribution, mean, standard deviation, and correlation. Inferential statistics in this research were analysis of variance (ANOVA), linear regression, and multiple regression. This chapter will display participant demographics, quantitative data analysis process and results. The researcher will present a summary of findings at the end of Chapter IV.

Demographic Characteristics of the Sample

The study was designed to measure psychological variables among Muslims. The initial sample size was 278 volunteers from about 500 initial questionnaires issued to participants. After

the removal of missing values and accounting for outliers, the sample size used for most of the analysis was reduced to 235. Demographic variables include gender, marital status, age, ethnicity, education, spirituality, and place of residence. As shown in Table 1, 54.9% of the respondents were male and 45.1% were female. Of the 235 participants in the marital status category, 71 (30.2%) were single and 158 (67.2%) were married. One person was widowed and five indicated they were divorced.

Only two age categories were used in this study; 9.4% of respondents were ages 18-21, and 90.6% were 22-64 years of age. The largest ethnic group was the Middle Eastern group, which constituted 76.6% of the respondents. African Americans, Asians, Hispanic, White and Other were the remaining groups with the following percentages, respectively: 0.9, 7.7, 0.4, 8.5 and 6. Fifty-two (22.1%) respondents reported had a high school diploma as their highest level of education, 84 (35.7%) held bachelor's degrees, 74 (31.5%) held master's degrees, and 23 (9.8%) held doctoral degrees. One person reported elementary school and one reported middle school as the highest educational level. Fifteen (6.4%) respondents reported low levels of spirituality, 155 (66.0%) reported intermediate, and 65 (27.7%) reported high levels. Most respondents (135; 57.4%) reported their place of residence as Asia, followed by North America with 74 people (31.5%). Eleven (4.7%) respondents lived in Europe, eight (3.4%) lived in South America, and three (1.3%) lived in Australia. Both Africa and Antarctica had the smallest representation with only two respondents each (0.9%).

Table 1

Frequency Table for Categorical Demographic Variables

Variable	Levels	Frequency	Percent
Gender	Male	129	54.9
	Female	106	45.1

Marital Status	Single	71	30.2
	Married	158	67.2
	Widowed	1	0.4
	Divorced	5	2.1
Age	18-21 years	22	9.4
	22-64 years	213	90.6
Ethnicity	African American	2	0.9
	Asian	18	7.7
	Hispanic	1	0.4
	Middle Eastern	180	76.6
	White	20	8.5
	Other	14	6.0
Education	Elementary School	1	0.4
	Middle School	1	0.4
	High School Diploma	52	22.1
	Bachelor's Degree	84	35.7
	Master's Degree	74	31.5
	Doctoral Degree	23	9.8
Spirituality	Low	15	6.4
	Intermediate	155	66.0
	High	65	27.7
Place of Residence	Africa	2	0.9
	Antarctica	2	0.9
	Asia	135	57.4
	Australia	3	1.3
	Europe	11	4.7
	North America	74	31.5
	South America	8	3.4

Mental Health, Psychological Flexibility, and Locus of Control Characteristics of the Sample

To answer all six research questions, the constructs of mental health, psychological flexibility, and locus of control were operationalized and measured using three separate instruments. All data were measured via self-report online survey. Mental health was measured using the Patient-reported Outcomes Measurement Information System (PROMIS-57), a 57-item Likert-type survey that includes seven dimensions: anxiety, depression, physical function, pain interference and intensity, fatigue, sleep disturbance, and satisfaction with social roles (Appendix E). A high PROMIS score indicates poor mental health. Psychological flexibility was measured using the Acceptance and Action Questionnaire-II (AAQ-II), a seven-item Likert-type survey that measures the extent to which respondents accept or avoid painful, anxious, or other negative emotions (Appendix C). The locus of control (LOC) was measured using the Multidimensional Health Locus of Control (MHLC) Scale, an 18-item Likert-type survey that measures the extent to which respondents attribute physical illness to personal actions or external forces (Appendix D). Six items measure internal LOC, six items measure chance external LOC, and six items measure powerful others external LOC.

The average mental health score for the entire sample (N = 235) was 121.15 ± 37.02 as measured by the PROMIS-57. The average psychological flexibility score was 19.6 ± 18.73 as measured by the AAQ-II. Regarding health locus of control, the average internal locus of control was 24.71. ± 5.06), the average chance external locus of control was 18.28 ± 5.03, and the average powerful others external locus of control was 19.43 ± 6.26. Table 2 shows the descriptive statistics of these variables. To ensure the internal consistency of the items, Cronbach's alpha values were obtained. The most internally consistent set of dimensions were from the mental health variable with a Cronbach's alpha value of 0.96. Psychological flexibility,

internal, chance external, powerful others locus of control had Cronbach's alpha values of 0.87, 0.61, 0.52, and 0.70, respectively.

Table 2

Descriptive Statistics for Mental Health, Psychological Flexibility, and Locus of Control

Variable	Mean	SD	Minimum	Maximum	Cronbach's alpha
Mental Health	121.15	37.02	56.0	246.0	0.96
Psychological Flexibility	19.68	8.73	7.0	49.0	0.87
Internal LOC	24.71	5.06	6.0	36.0	0.61
Chance External LOC	18.28	5.03	6.0	31.0	0.52
Powerful Others LOC	19.43	6.26	6	36.0	0.70

Results Regarding Demographic Variables Related to Locus of Control, Psychological Flexibility, and Mental Health among Muslims

In an attempt to answer the first research question, "How are demographic variables related to locus of control, psychological flexibility, and mental health among Muslims?" —a correlational analysis was performed to examine the level of linear association between each of the demographic variables and each of the psychological measures. Gender and powerful others external locus of control has significant weak-positive association ($r = 0.208$, $p < 0.001$), suggesting that men are more likely to be associated with higher powerful others external locus. Marital status had a significant negative relationship with both mental health ($r = -0.134$, $p < 0.05$), and psychological flexibility ($r = -0.141$, $p < 0.05$). Thus, married people are less likely to be associated with mental health issues or with psychological flexibility issues. Spirituality was significantly negatively correlated with mental health and psychological flexibility, meaning that a more spiritual person is less likely to be associated with mental health and psychological

flexibility problems, whereas those with low spirituality are more likely to be associated with these issues. Table 3 shows a correlation matrix for the demographic and mental health variables. Spearman's P correlation was used in this instance because the demographic variables were mostly ranked.

Table 3

Correlation Matrix of the Demographic Variables and Psychological Variables

Variables	Mental Health	Psychological Flexibility	Internal LOC	Chance External LOC	Powerful Others External LOC
Gender	-0.024	0.019	0.004	0.021	0.208**
Age	-0.096	-0.096	0.092	-0.064	0.027
Ethnicity	-0.075	-0.075	0.040	-0.053	-0.106
Marital Status	-0.134*	-0.141*	0.085	-0.069	0.076
Education	-0.119	-0.082	-0.027	-0.082	0.015
Spirituality	-0.163*	-0.180**	-0.086	0.001	0.108
Place of Residence	-0.241**	-0.144*	0.019	-0.174**	-0.169
Length of Residency	0.124	0.076	0.120	0.062	0.055

Note: *, $p < 0.05$; **, $p < 0.01$.

Before the key analysis, the Shapiro-Wilk test was conducted to test for normality (Table 4). Both psychological flexibility and mental health scores were not normally distributed. Consequently, non-parametric tests were used for analysis involving psychological flexibility and mental health variables.

Table 4

Normality Tests for Psychological Flexibility and Mental Health

Variable/Test	Test Statistic	Df	p-value

Psychological Flexibility	0.076	235	<0.0001
Mental Health	0.88	255	<0.0001

A Kruskal-Wallis test was conducted to evaluate the differences among spirituality levels (Low, Intermediate, High) on psychological flexibility (AAQ-II scores). The test was significant $\chi^2(2, N = 235) = 8$, $p < 0.05$, with a mean rank psychological flexibility score of 132.17 for low spirituality level, 125.05 for intermediate spirituality level, and 97.92 for high spirituality level (Table 5). This is a confirmation of the result obtained from the correlation analysis performed previously, which showed that higher spirituality was related to low acceptance issues.

Table 5

Psychological Flexibility Differs with Level of Spirituality among Muslims

	Spirituality	N	Mean Rank
Psychological Flexibility	Low	15	132.17
	Intermediate	155	125.05
	High	65	97.92
	Total	235	

Similarly, another non-parametric test, the Mann Whitney *U* test, was performed to examine the gender effect on mental health. The result showed no significant gender effect ($U = 6648.0$, $p > 0.05$) on mental health (Table 6).

Table 6

Mental Health Among Males and Females

	Gender	*N*	Mean Rank	Sum of Ranks
Mental Health	Female	129	119.47	15411.00
	Male	106	116.22	12319.00
	Total	235		

Results Regarding the Relationships between Psychological Flexibility, Locus of Control, and Mental Health

Table 7 shows the Pearson correlation matrix for mental health, psychological flexibility, and internal, chance external, and powerful others external loci of control. The second research question was "What is the relationship between psychological flexibility and mental health among Muslims?" There was a positive correlation between psychological flexibility and mental health ($r = 0.632$, $p < 0.05$). This means that high psychological flexibility (low AAQ-II score) is related to good mental health (low PROMIS-57 score) and psychological inflexibility is related to poor mental health. A scatterplot showing this relationship is shown in Figure 1.

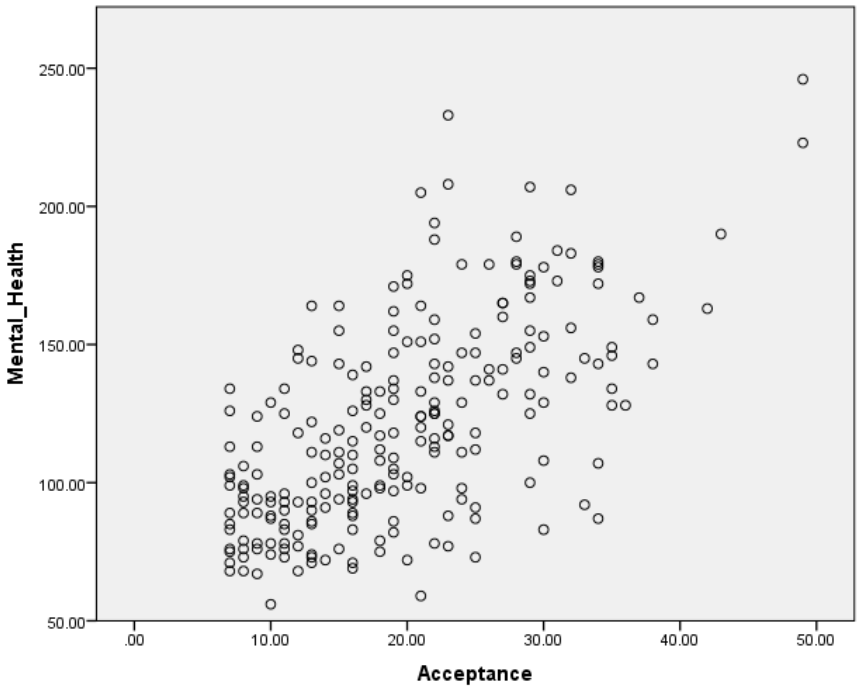

Figure 1. The scatter plot of the linear relationship between mental health and psychological flexibility.

The third research question was "What is the relationship between locus of control and mental health among Muslims?" There was a significant weak positive linear relationship between mental health and chance external locus ($r = 0.356$, $p < 0.01$) and between mental health and powerful others external locus ($r = 0.278$, $p < 0.01$). This means that poor mental health (high PROMIS-57 score) was correlated with greater reliance on external locus of control (high MHLC score), whether chance or powerful others, rather than internal locus of control. Internal locus of control had a negative relationship with mental health scores, but this was not statistically significant. It is also important to note that the coefficient of correlation values obtained for the significant pairs are weak.

The fourth research question was "What are the relationships between psychological flexibility, locus of control, and mental health?" Powerful others external locus was significantly correlated ($p < 0.01$) with mental health ($r = .278$), psychological flexibility ($r = .261$), internal locus of control ($r = .269$) and chance external locus of control ($r = .459$). This means that a strong powerful others external locus (MHLC score) was associated with poor mental health (high PROMIS-57 score), psychological inflexibility (AAQ-II score), and high internal and chance external loci of control (MHLC scores). Chance external locus of control was positively correlated with psychological flexibility ($r = .359$, $p < 0.01$) and internal locus of control ($r = .171$, $p < 0.01$). This means that psychological inflexibility (high AAQ-II score) was associated with a strong chance external locus of control (high MHLC score).

Table 7

Correlations between Locus of Control, Psychological Flexibility, and Mental Health

Variable	Mental Health	Psych. Flexibility	Internal LOC	Chance External LOC	Powerful Others External LOC
Mental Health	1	.632**	-.063	.356**	.278**
Psychological Flexibility	.632**	1	-.046	.359**	.261**
Internal LOC	-.063	-.046	1	.171**	.269**
Chance External LOC	.356**	.359**	.171**	1	.459**
Powerful Others External LOC	.278**	.261**	.269**	.459**	1

Note. **, $p < 0.01$.

Results Regarding Confirmation of Factors of Psychological Flexibility on Mental Health of Muslims

A linear regression was calculated to predict mental health based on psychological flexibility. All assumptions necessary for this test were met; both variables were continuous. The regression model with psychological flexibility produced (F (1, 233) = 155.265, $p < .001$) with an R^2 of .400. In other words, 40.0% of the variation in total mental health can be explained by psychological flexibility. There was a linear relationship between the variables and no significant outliers. The residuals were normally distributed as shown in Figure 2 below. As shown in Table 8, psychological flexibility was a significant predictor of mental health (t(233) = 12.461, $p <$ 0.01). The regression model is *Mental health = 68.394+2.681 (Psychological flexibility).*

Table 8

Linear Regression Analysis of Psychological Flexibility on Mental Health

Variable	*B*	*SE B*	*B*	*T*	*P*
Psychological Flexibility	2.681	.215	.632	12.461	.000

Note. R^2=.400 (p <.001)

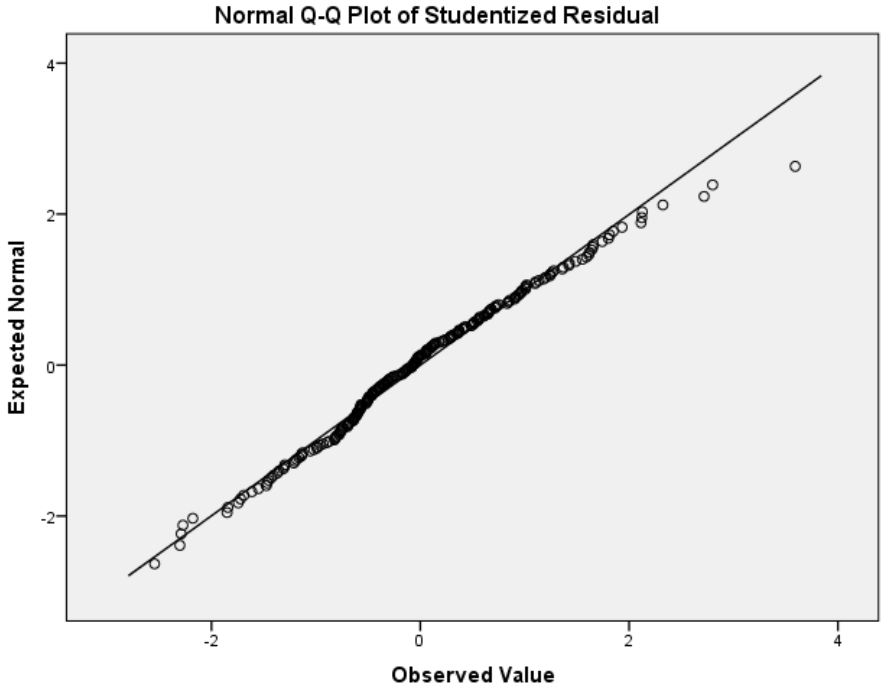

Figure 2. Normal Q-Q plot of the residuals showing normality of psychological flexibility and mental health regression data.

Results Regarding Prediction of Mental Health by Multidimensional Health Locus of Control

A multiple regression was calculated to predict mental health based on health locus of control. The multiple regression model with all three LOCs produced (F (3, 231) = 15.588, p < .001) with an R^2 of .168. In other words, at least one variable has explanatory power and 16.8%

of the variation in total mental health can be explained by internal, chance external, and powerful others external loci of control. To determine which independent variables significantly predict mental health, a model was structured. For the model assumption, normal and linear assumptions were met and standardized residuals were uncorrelated with each of the predictor variables. The graph of the Q-Q plot (Figure 3) confirms one of the assumptions of normality of the residuals.

The results shown in Table 9 revealed that all the locus of control variables were significant predictors of mental health: internal locus of control (t (231) = -2.63, $p < 0.01$); chance external locus of control (t (231) = 4.44, $p < 0.001$); powerful others external locus of control (t (231) = -2.66, $p < 0.01$). As found in Table 7, internal locus of control had an inverse relationship with mental health scores; both external locus of control measures were positively associated with mental health scores. Again, this supports the previous finding that poor mental health (high PROMIS-57 score) was correlated with greater reliance on external locus of control (high MHLC score), whether chance or powerful others. The regression equation is given by *Mental health = 89.29 -1.199 (Internal LOC) + 2.209 (Chance external LOC) + 1.088 (Powerful others LOC).*

Table 9

Multiple Linear Regression Analyses of Loci of Control on Mental Health

Variable	*B*	*SE B*	*B*	*T*	*P*
Internal LOC	-1.199	.456	-.164**	-2.629	.009
Chance External LOC	2.209	.498	.300***	4.436	.000
Powerful Others External LOC	1.088	.409	.184**	2.656	.008

Note. R^2=.168 (p <.001)

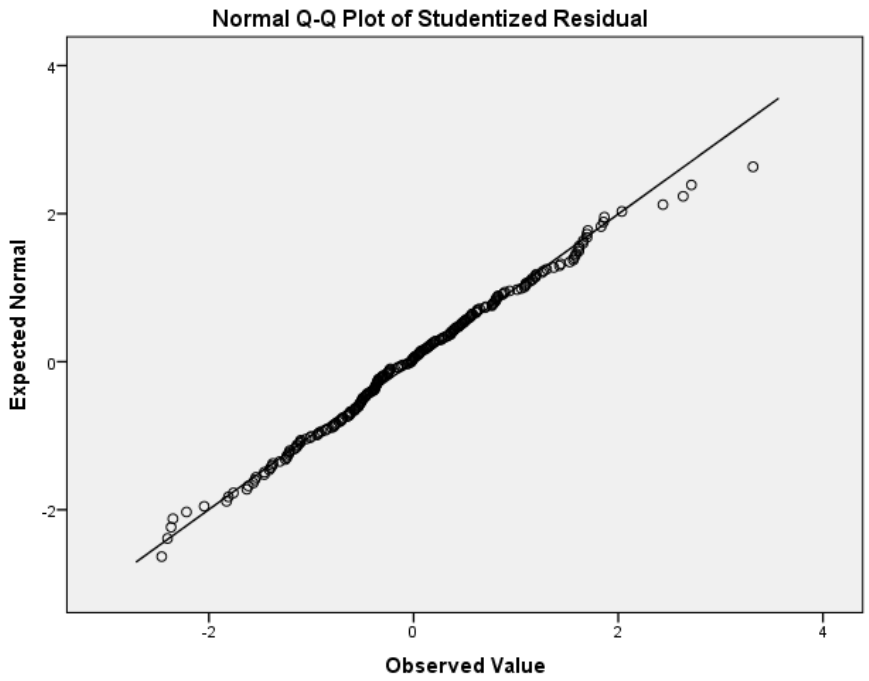

Figure 3. Q-Q plot showing normally distributed residuals

Discussion

This section presents an overview of research questions, explanations of quantitative data, a summary of key findings, and an interpretation of findings presented within the perspective of prior research. This study was designed to investigate the relationships between mental health, psychological flexibility, and locus of control within the Muslim population plus how these variables are related to demographic characteristics such as gender, level of spirituality, and marital status. Mental health was measured by PROMIS-57 survey, psychological flexibility was measured by the AAQ-II survey, and locus of control was measured by the MHLC survey. All data were self-reported via online form.

The following research questions guided this study:

RQ1: How are demographic variables related to locus of control, psychological flexibility, and mental health among Muslims?

RQ2: What is the relationship between psychological flexibility and mental health among Muslims?

RQ3: What is the relationship between locus of control and mental health among Muslims?

RQ4: What are the relationships between psychological flexibility, locus of control, and mental health?

RQ5: Are the factors of the Acceptance and Action Questionnaire confirmed within the Muslim population?

RQ6: Are the factors of the Multidimensional Health Locus of Control confirmed within the Muslim population?

Interpretation of Findings

Research Question 1. Most of the sample of 235 participants identified as ethnically Middle Eastern living in Asia plus men and women were evenly represented. Married people were less likely to be associated with poor mental health (high PROMIS-57 scores) and psychological inflexibility. Thus, marriage may be protect against depression, anxiety, and other mental illness. In fact, marriage has been found to have several positive effects on the psychological well-being of the individual. These benefits cannot be wholly attributed to neither simple companionship nor sexual gratification. Hughes and Gove (1981) found that married individuals have, on average, better mental health than unmarried people who live alone or

unmarried people who live with others. The link between marital status and psychological flexibility remains unclear and further studies are needed.

Understanding the importance of religion in healing Muslim patients is essential for providing good healthcare, whether mental or physical. Qidwai, Tabassum, Hanif, and Khan (2009) found that 90% of patients in a teaching hospital in Karachi, Pakistan, reported personally experiencing healing in response to prayer. There was an inverse relationship between level of spirituality and poor mental health (high PROMIS-57 scores) and psychological inflexibility. This means that participants who reported high levels of spirituality were less likely to be associated with poor mental health and psychological flexibility problems, whereas those with low spirituality were more likely to be associated with these issues.

This trend has been found in previous meta-analysis of the relationships between religious involvement and mental health outcomes in Middle Eastern countries with largely Muslim populations (Koenig, Al Zaben, & Khalifa, 2012). In fact, trends in Muslim populations are similar to those seen in Western countries made up of predominantly Christian populations. This may be due to similar monotheistic beliefs, but data regarding the Muslim community are relatively sparse in comparison to Christian communities; more research is needed.

The results showed that gender and powerful others external locus has significant weak positive association, suggesting that men are more likely to be associated with higher powerful others external locus. No difference in mental health was found based on gender. Previous studies have also found a gender difference regarding locus of control. Among patients with persistent pain, Buckelew et al. (1990) found that while younger men exhibited a strong internal locus of control, older men skewed significantly more toward powerful others external locus of control.

Negative correlations were found between place of residence and mental health, psychological flexibility, and chance external locus of control; however, place of residence was purely categorical. Therefore, the interpretation is statistically meaningless because correlations are meaningful only for ordinal or numeric variables. These data are especially inconclusive because the majority of the sample (57.4%) reported residence in Asia.

Research Question 2. Mental health and psychological flexibility were positively correlated. The PROMIS-57 survey measures both physical and mental wellbeing; including questions about physical function, anxiety, depression, sleep quality, fatigue, the ability to participate in social roles and activities, and pain interference and intensity (Appendix E). We did not break down the analysis to determine the correlations within each component of the PROMIS-57 test. However, this correlation was strong, supported by previous studies that found psychological flexibility to be a fundamental aspect of mental health (Flaxman & Bond, 2010; Kashdan & Rottenberg, 2010).

Previous studies have also found strong correlations between psychological flexibility and both mental wellbeing and physical health. People with higher psychological flexibility are more effective in goal-related opportunities, have less emotional distribution, and are more likely to achieve their goals (Bond et al., 2008). Bluett et al. (2014) found a positive correlation between psychological inflexibility and anxiety, recommending acceptance and commitment therapy for the treatment of general anxiety disorder.

When creating the revised seven-item AAQ-II instrument to measure psychological flexibility, Bond et al. (2011) found that greater psychological inflexibility was associated with greater depression and anxiety symptoms and overall poor mental health. The samples used were taken from populations in the U.K. and the U.S. overwhelmingly identified as white (vs. non-

white), with no differences found within age, gender or race (Bond et al., 2011). Thus, the present results are novel and important because the same relationship between psychological flexibility and mental health was found in a non-white population—76.6% ethnically Middle Eastern and only 8.5% white.

Research Question 3. Among the entire sample, poor mental health was correlated with greater reliance on external locus of control, whether chance or powerful others, rather than internal locus of control. Previous studies have found that greater external locus of control predicted mental ill-health one year later (Bond & Bunce, 2003). Muslims believe in their religion's tenets to treat any problems that arise, from work-related issues to child-rearing challenges. Ali et al. (2005) explained that "Muslims consider Islam to be central to their way of life and place great value on the integrity and functioning of the family" (p. 202). Muslims reconcile their sense of personal responsibility with the idea of accepting Allah's divine sovereignty and the impact of this belief on their mental health.

In a review of best practices for school psychologists who provide services to Arab Americans, Haboush (2007) found that "religious explanations for mental illness are common [among Arab Americans] given the dominant role of religion in Arab culture and a stronger external, rather than internal, locus of control." Arab culture is predominately Muslim, and although Allah is credited with controlling all aspects of life, mental and physical maladies are sometimes viewed as being caused by evil spirits (djinn), the evil eye, and other supernatural forces (Al-Krenawi & Graham, 2000).

Research Question 4. Powerful others external locus of control was correlated with poor mental health, as mentioned above, as well as psychological inflexibility. This is interesting because previous studies of acceptance and commitment therapy, which emphasizes

psychological flexibility and a concept of "creative helplessness" provides no clear evidence that psychological flexibility, or acceptance, is strongly associated with either an internal or external locus of control. Gutiérrez et al. (2004) found that acceptance-based therapy could be more therapeutic for coping with pain than a cognitive-control-based therapy that stressed an internal locus of control.

Powerful others external locus of control was positively correlated with both internal locus of control (r = .269) and chance external locus of control (r = .459). It is important to note that internality vs. externality is a false dichotomy because people can utilize both approaches in a context-dependent manner. This is especially true for both types of external locus of control, which were more strongly correlated with each other than with internality.

Research Question 5. Simple linear regression analysis revealed that psychological flexibility was a significant predictor of mental health in this study. While the second research question was concerned with the strength of the relationship between psychological flexibility and mental health, the fifth research question was concerned with nature of that relationship.

Bond et al. (2011), the creator of the AAQ-II instrument, emphasized that it was "not designed as a tool for diagnosing mental disorders" (p. 680). Keeping this caveat in mind, Bond et al. (2011) nevertheless conducted regression analysis and found an AAQ-II above 24-28 points was associated with mental health values that indicated poor mental health or distress. Our study measured mental health using an instrument different from Bond et al. (2011), as well as a distinctly non-white population, as discussed previously. Thus, our finding is supported by previous research, adding novel data to the literature due to the distinctiveness of studying the Muslim population in this research.

Research Question 6. Multiple linear analysis revealed that locus of control was a significant predictor of mental health among Muslims in this study. While the third research question was concerned with the strength of the relationship between locus of control and mental health, the sixth research question was concerned with nature of that relationship. Internal locus of control had an inverse relationship with mental health scores, and both external locus of control measures were positively associated with mental health scores. These results support the findings of the Pearson correlations reported above regarding findings related to the third research question.

These findings are supported by previous studies indicating the psychological benefits of internal locus of control (Cheng et al., 2013; Elfström & Kreuter, 2006; Helgeson, 1992; Park & Gaffey, 2007; Stewart & Yuen, 2011). For example, Bond and Bunce (2003) found that a greater external locus of control predicted poorer mental health after a one-year period. Unlike the unidimensional spectrum originally conceptualized by Rotter (1966), our study goes further to distinguish two different external loci of control—chance and powerful others.

Other studies have further distinguished between powerful human others and God. Interestingly, one study found that a God external locus of control was similarly beneficial to mental health as an internal locus of control, while powerful human others locus of control remained detrimental to mental health (Aflakseir & Mohammad-Abadi, 2016). This was especially relevant to our study because data were collected from a devoutly Muslim population in Iran.

In the following chapter, the implications and significance of these results and future research directions will be discussed.

Chapter V

Summary, Implications, and Recommendations

This study was designed to investigate the relationships between mental health, psychological flexibility, and locus of control within the Muslim population; and how these variables are related to demographic characteristics such as gender, level of spirituality, and marital status. Mental health was measured by the PROMIS-57 survey, psychological flexibility was measured by the AAQ-II survey, and locus of control was measured by the MHLC survey. The demographic characteristics measured were gender, age, marital status, ethnicity, place of residence (by continent), length of residence, and level of spirituality. All data were self-reported via online form and the sample consisted of 235 participants. This research design is commonplace and appropriate for social science research given that its goal is to collect the data at only one point in time (Bobbie, 2016).

The relationship between locus of control and psychological flexibility among adherents to the Islamic faith has not been explored in depth by social scientists. Due to this limitation of scientific research, few published articles are available regarding Muslims' acceptance of fate and its relation to their mental health. The present study was necessary to help practitioners understand how to provide psychological counseling services to this population. Professional counselors need to know more about this population to work with them in effective ways (Ibrahim & Dykeman, 2011). The Muslim population is growing worldwide with many occupying positions of power and influence. Furthermore, changes in the political and economic realms can affect the prevalence of mental illness among Muslims (Abu-Ras & Abu-Bader, 2008; Amer & Bagasra, 2013).

Although psychological flexibility and locus of control have received much attention from scholars, college administrators, physicians, and others; there are numerous unanswered questions about these characteristics among Muslims. This study was designed to investigate the relationships between psychological flexibility, locus of control, and mental health among Muslims worldwide. The answers to these questions are important because knowing how Muslims cope with difficulties and negative events can be beneficial to teachers, counselors, scholars, and Muslims in general.

The first research question asked is, "How are demographic variables related to locus of control, psychological flexibility, and mental health among Muslims?" To answer this question, a correlational analysis was performed to examine the level of linear association between each of the demographic variables and each of the psychological measures. Of the 235 participants, 76.6% identified as ethnically Middle Eastern and 57.4% reported living in Asia. These numbers roughly correspond to the worldwide distribution of Muslims, with over 60% of the global Muslim population located in Asia and another 20% in the Middle East (Mohamed & Mohamed, 2016). There was an inverse relationship between level of spirituality and poor mental health (high PROMIS-57 scores) and psychological inflexibility. This means that participants who reported high levels of spirituality were less likely to be associated with poor mental health and psychological flexibility problems, whereas those with low spirituality were more likely to be associated these issues.

Married people were less likely to be associated with poor mental health (high PROMIS-57 scores) and psychological inflexibility. Marriage has been found to have several positive effects on the psychological well-being of the individual (Hughes & Gove, 1981), but the link between marital status and psychological flexibility remains unclear; further studies are needed.

Gender and powerful others external locus were positively correlated, suggesting that men are more likely to be associated with higher powerful others external locus. No difference in mental health was found based on gender. Previous studies have found a gender difference regarding locus of control. Among patients with persistent pain, Buckelew et al. (1990) found that while younger men exhibited a strong internal locus of control, older men skewed significantly more toward powerful others external locus of control.

The second research question asked, "What is the relationship between psychological flexibility and mental health among Muslims?" Mental health and psychological flexibility were positively correlated. This finding is supported by previous studies that found psychological flexibility is a fundamental aspect of mental health (Flaxman & Bond, 2010; Kashdan & Rottenberg, 2010). People with higher psychological flexibility are more likely to achieve their goals while experiencing less anxiety (Bluett et al., 2014; Bond et al., 2008). Psychological flexibility can be improved using acceptance and commitment therapy or other mindfulness-based therapeutic techniques (Boly et al., 2011).

Given that most respondents were Middle Eastern, focus on increasing acceptance-based mental health services in that area is essential. As a whole, the Middle East and North Africa suffer the highest depression rates in the world (Dewey, 2013). Worldwide, the incidence of depression is about 4%, but nearly 7% in the Middle East (Karamustafalioğlu, 2009). The study noted Egypt, Saudi Arabia, Syria, United Arab Emirates, and Lebanon as countries most heavily burdened by depression. Due to enduring stigma around mental illness in the Middle East, many patients seek treatment from primary healthcare providers, who can often be poorly educated in psychiatric medicine (Karamustafalioğlu, 2009). In addition, access to any type of mental health services is extremely limited in the Middle East.

Future research should investigate the effects of acceptance and commitment therapy on psychological flexibility and mental health among Muslims. Despite the scarcity of such services in the Middle East, one recent online psychotherapy platform has emerged which may help fill the dire need in this area. A new Egyptian company called Shezlong connects patients and physicians for psychotherapy sessions via online chat or video call through the website (Talaat, 2016). The privacy of this platform may ameliorate the sense of shame or stigma associated with seeking help for mental health, thereby encouraging more Middle Easterners to access needed psychotherapy services.

The third research question was, "What is the relationship between locus of control and mental health among Muslims?" Among the entire sample, poor mental health was correlated with greater reliance on external locus of control, whether chance or powerful others, rather than internal locus of control. Previous studies have found that greater external locus of control predicted mental ill-health at a later point in time (Bond & Bunce, 2003). Muslims believe in their religion's tenets to treat any problems that arise, from work-related issues to child-rearing challenges. Ali et al. (2005) explained that "Muslims consider Islam to be central to their way of life and place great value on the integrity and functioning of the family" (p. 202). Muslims reconcile their sense of personal responsibility with the idea of accepting Allah's divine sovereignty and the impact of this belief on their mental health.

In a review of best practices for school psychologists who provide services to Arab Americans, Haboush (2007) found that "religious explanations for mental illness are common [among Arab Americans] given the dominant role of religion in Arab culture and a stronger external, rather than internal, locus of control." Arab culture is predominately Muslim, and although Allah is credited with controlling all aspects of life, mental and physical maladies are

sometimes viewed as being caused by evil spirits (*jinn*), the evil eye, and other supernatural forces (Al-Krenawi & Graham, 2000).

The fourth research question was, "What are the relationships between psychological flexibility, locus of control, and mental health?" Powerful others external locus of control was correlated with poor mental health, as mentioned above, as well as psychological inflexibility. This is interesting because of previous studies of acceptance and commitment therapy, which emphasizes psychological flexibility and a concept of "creative helplessness." No clear evidence is available that psychological flexibility, or acceptance, is strongly associated with either an internal or external locus of control. For pain management, Gutiérrez et al. (2004) found that acceptance and commitment therapy was more effective than cognitive therapy that stressed an internal locus of control. Powerful others external locus of control was positively correlated with both internal and chance external locus of control.

To answer the fifth research question, simple linear analysis revealed that psychological flexibility was a significant predictor of mental health. These results support the finding related to the second research question, as well as the existing scientific literature on locus of control and mental health (Bond & Bunce, 2003). Research on chronic pain patients has also found that acceptance and mindfulness, which are components of psychological flexibility, can significantly reduce subjective pain intensity (McCracken & Velleman, 2010; McCracken & Zhao O'Brien, 2010).

Muslims may be quite receptive to cognitive interventions that utilize acceptance and commitment therapy to improve psychological flexibility. Trust in Allah (*tawakkul*) and patience or perseverance amidst trials (*sabr*) are core values in Islam and can be harnessed in counseling to promote mindfulness and acceptance in a spiritually-sensitive manner (Husain, 1998).

Psychotherapy with the addition of a religious component was found to be more effective treatment for anxiety and depression among Muslim patients (Azhar & Varma, 1995; Azhar, Varma, & Dharap, 1994). However, counselors should beware to not encourage fatalism; that is, refusal of mental health services and the resultant, unnecessary suffering with poor mental health in the belief that it is a test from Allah.

To answer the sixth research question, multiple linear analysis revealed that locus of control was a significant predictor of mental health among Muslims in this study. Internal locus of control had an inverse relationship with mental health scores, and both external locus of control measures were positively associated with mental health scores. These results support the finding related to the third research question, as well as the existing scientific literature on locus of control and mental health (Bond & Bunce, 2003).

Changing locus of control among Muslims in non-Western countries may be challenging. Internal locus of control is emphasized in Western psychiatric medicine, but this is a cultural norm (Amer & Jalal, 2012). Internal locus of control "may not be congruent with many Muslims' belief in the power of external forces like God and the supernatural (e.g., angels, *jinn*) in influencing their lives" (Amer & Jalal, 2012, p. 100). In order to improve mental health among Muslims by encouraging internal locus of control, psychiatrists and counselors should incorporate Islamic principles into cognitive interventions. For example, helping Muslim clients focus on Allah's blessings can serve as a positive reminder of the psychological resilience and strength Allah has bestowed on the individual. Future research should focus on determining effective ways of increasing self-efficacy and an internal locus of control among Muslims that remains faithful to Islamic doctrine of Allah's omnipotence.

Limitations

Certain limitations emerged throughout this research, as with any study. The most obvious limitation was the use of online self-reporting data collection procedures. For example, the participants' responses to questionnaires might have been biased and the researcher had no control over the environment. In addition, this study was a cross-sectional study in which participants responded to the survey at one time; therefore, other factors might have affected their responses, such as having an unexpected issue on the specific day the survey was completed.

Sample size was another limitation. The researcher had no control over the data collection setting, although participants did have informed consent in the beginning of the survey. Thus, incomplete responses and extreme missing data affected the sample size and may have impacted this study. The results of this study cannot be generalized because the sample of the study was a convenience sample that was not fully representative of the entire global Muslim population. Social desirability is another limitation; the participants may not have chosen what actually represents them; instead, they may have submitted responses that represented religious idealism.

Implications and Recommendations

Despite the limitations, the data were collected through standard means of practice, and statistical analyses have been applied to obtain the results. The findings of this study suggest that higher spirituality levels, that is, more devout practice and beliefs among Muslims may be beneficial for mental health. This may be attributable to the Islamic emphasis on acceptance of Allah's will in everyday life, which may promote psychological flexibility. Psychological

flexibility has been found to be a fundamental aspect of mental health previously (Flaxman & Bond, 2010; Kashdan & Rottenberg, 2010).

This health acceptance must be tempered, however, with an equally healthy internal locus of control, or sense of personal agency. This balance is reflected in the "Serenity Prayer" attributed to Niebuhr (1934), commonly used to help recovering addicts: "God, grant me the serenity to accept the things I cannot change, courage to change the things I can, and wisdom to know the difference." This study found that Muslims, especially men, favor a powerful others external locus of control. External locus of control was associated with poor mental health, whether people attributed it to chance or powerful others. This suggests that accepting Allah's will in personal circumstances may encourage fatalism, as people do not acknowledge personal responsibility along with divine guidance. Fatalism can influence people's self-efficacy, which in turn affects health-seeking behaviors such as psychiatric therapy or other medical interventions (Straughan & Seow, 1998).

A significant dearth of rigorous studies of the Muslim population in the social sciences remains; this subject still needs much more clinical research. While Muslims worldwide follow the same five pillars of Islam, regional differences in practice remain. Future studies should compare and contrast different regional populations (e.g., Malaysia vs. Canada vs. Saudi Arabia) to differentiate between the influence of Islam and the non-religious cultural factors that encourage psychological flexibility and health locus of control that promote mental health and wellbeing.

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Appendix A

Invitation Letter for Participation

St. Mary's University

Invitation Letter for Participation: Dissertation Project

Dear Participant,

This letter is an invitation for your voluntary participation in a dissertation project entitled

A Multiple Regression Analysis of Locus of Control and Psychological Flexibility Regarding the Total Mental Well-Being of Muslims

The following procedures will be utilized:

I am collecting information from Muslims who are 18 years of age and older to examine the relationship between Locus of Control, psychological flexibility, and mental health among Muslims. I hope to have a minimum of 368 participants for this study. The decision to participate is completely voluntary. Upon agreeing to participate, a consent form will be given to you to sign before partaking in the survey. It contains four parts: the demographic information; Acceptance and Action Questionnaire–II (AAQ-II) (Bond et al., 2011); Multidimensional Health Locus of Control (MHLC) Scale, (Wallston, Wallston, & DeVellis, 1978); and PROMIS-57, Patient-reported outcomes measurement information system (NIH, 2011). The survey will take about 20 to 25 minutes to complete.

All responses given by volunteers will be kept completely confidential and will be destroyed once the analysis is completed. Personal information such as name and contact information will not be required and will not be requested. Any information that the volunteer provides within the survey will be used only for the purposes of researching the relationship between Locus of Control, psychological flexibility, and mental health among Muslims. In addition, volunteers should be aware that no financial compensation will be offered for participation in this study. Your participation may help the researcher to learn more about and understand the relationship between Locus of Control, psychological flexibility, and mental health among Muslims.

If you have any questions or concerns about this research study, or if any problems arise, please contact the Principal Investigator: Hawazan Binzaqr at 210.763.3645 or e-mail Hbinzaqr@stmarytx.edu. You may also contact the faculty advisor for this research study, Esteban Montilla, PhD at 210.438.6406 or e-mail rmontilla@stmarytx.edu.

ANY QUESTIONS REGARDING YOUR RIGHTS AS A RESEARCH PARTICIPANT MAY BE ADDRESSED BY THE ST. MARY'S UNIVERSITY INSTITUTIONAL REVIEW BOARD HUMAN SUBJECTS AT ONE CAMINO SANTA MARIA, SAN ANTONIO, TX 78228. CHAIR, INSTITUTIONAL REVIEW BOARD AT 210.436.3736 or email at

IRBCommitteeChair@stmarytx.edu. ALL RESEARCH PROJECTS CARRIED OUT BY INVESTIGATORS AT ST. MARY'S UNIVERSITY ARE GOVERNED BY THE REQUIREMENTS OF THE UNIVERSITY AND THE FEDERAL GOVERNMENT.

Your collaboration and participation in this project is highly appreciated.

Sincerely,
Hawazan Binzaqr, MA
Principal Investigator

Appendix B

Informed Consent Form

Title: A Multiple Regression Analysis of Locus of Control and Psychological Flexibility Regarding the Total Mental Well-Being of Muslims
Student Researcher: Hawazan Binzaqr, M.A.
Faculty Adviser: Esteban Montilla, Ph.D., Department of Counseling and Human Services

I am a fully volunteer participant in the above-mentioned project. My participation may continue as a volunteer or be refused if I decide to cease partaking once the study has begun. Should I withdraw from the study, which I may do at any time, my responses will be kept confidential. The investigator(s) has the ultimate right to withdraw me from the study at any time.
Should I choose to continue on with the study, I am confirming upon request to thoroughly read this consent form, that the purpose of this study is to examine the effects that locus of control and psychological flexibility might have on the mental health of Muslims.
I am also confirming that I received an invitation to participate in this study, that this study will measure my given responses, and that the anticipated time necessary to commit to this project will be approximately 20 to 25 minutes.

I have been advised that although there are no physical risks associated with participation in this project, I may experience some discomfort in reviewing my personal feelings and opinions. Should I actually experience any emotional distress, I may choose to opt out of the study.
In the event of injury resulting during this research, neither St. Mary's University nor the researcher(s) are responsible for financial compensation or for absorbing the costs of any medical treatment. However, any necessary facilities, emergency treatments, and/or professional services will be available to research participants through means available to the general public.
In addition, I have been notified that there will be no financial compensation offered for my participation in this study. My participation will be solely to help the investigator(s) better understand how the effects of locus of control and psychological flexibility impact the mental health of Muslims. Any data collected from the study, such as my responses, will be used strictly for educational purposes.

I have been assured my name shall not be identified through these studies. Anonymity through identity is optional; since no requirements of self-proof exist, every effort will be made to maintain the confidentiality of my study records. All data will be used with permission and within legal limitations.

Before and after my participation, should I require it, the investigator(s) will offer all relatable answers to my questions as obtained during the course of this study. Should there be any problems involving this study and all provisos found within this consent form, I may contact the Principal Investigator(s) (Hawazan Binzaqr M.A.), at St. Mary’s University Counselor Education and Supervision program, hbinzaqr@mail.stmarytx.edu . Participants may also contact the faculty adviser for this research, Dr. Rómulo Montilla at rmontilla@stmarytx.edu .

Such participation does not release the investigator(s), institution(s), sponsor(s) or granting agency(ies) from their professional and ethical responsibility to me.
I HAVE READ THE INFORMATION PROVIDED ABOVE AND HAD MY QUESTIONS ANSWERED TO MY SATISFACTION. I VOLUNTARILY AGREE TO PARTICIPATE IN THIS STUDY.
IF YOU HAVE ANY QUESTIONS ABOUT YOUR RIGHTS AS A RESEARCH SUBJECT OR CONCERNS ABOUT THIS RESEARCH STUDY, PLEASE CONTACT THE CHAIR, INSITIUTIONAL REVIEW BOARD, ST MARY'S UNIVERSITY AT 210-436-3736 or email at IRBCommitteeChair@stmarytx.edu. ALL RESEARCH PROJECTS CARRIED OUT BY INVESTIGATORS AT THE UNIVERSITY ARE GOVERNED BY THE REQUIREMENTS OF THE UNIVERSITY AND THE FEDERAL GOVERNMENT.

Appendix C

Demographic Questionnaire

1- **Gender**: What is your gender?
   a. Female
   b. Male
   c. Other

2- **Age:** What is your age?
   a. 18-21 years old
   b. 22-64 years old
   c. 65 years or older

3- **Ethnicity:** What is your ethnicity?
   a. African American
   b. Asian
   c. Hispanic
   d. Middle Eastern
   e. White
   f. Other

4- **Marital Status:** What is your marital status?
   a. Single
   b. Married
   c. Widowed
   d. Divorced
   e. Separated

5- **Education:** What is the highest level you have completed?
   a. Elementary school
   b. Middle School
   c. High school, Diploma.
   d. Bachelor's degree
   e. Master's degree
   f. Doctorate degree

6- Spirituality: How would you rate your spirituality/religious involvement?
   a. Low
   b. Intermediate
   c. High

7- Place of residency:

a. Africa
b. Antarctica
c. Asia
d. Australia
e. Europe
f. North America
g. South America

8- Length of residency:

a. 1 to 5 years
b. 6 to 10 years
c. 11 to 15 years
d. 16 to 20 years
e. Longer than 20 years

Appendix D

Acceptance and Action Questionnaire-II (AAQ-II)

Below you will find a list of statements. Please rate how true each statement is for you by circling a number next to it. Use the scale below to make your choice.

1	2	3	4	5	6	7
never true	very seldom true	seldom true	sometimes true	frequently true	almost always true	always true

1. My painful experiences and memories make it difficult for me to live a life that I would value.	1	2	3	4	5	6	7
2. I'm afraid of my feelings.	1	2	3	4	5	6	7
3. I worry about being unable to control my worries and feelings.	1	2	3	4	5	6	7
4. My painful memories prevent me from having a fulfilling life.	1	2	3	4	5	6	7
5. Emotions cause problems in my life.	1	2	3	4	5	6	7
6. It seems like most people are handling their lives better than I am.	1	2	3	4	5	6	7
7. Worries get in the way of my success.	1	2	3	4	5	6	7

Appendix E

Multidimensional Health Locus of Control (MHLC) Scale

Instructions: Each item below is a belief statement about your medical condition with which you may agree or disagree. Beside each statement is a scale which ranges from strongly disagree (1) to strongly agree (6). For each item we would like you to circle the number that represents the extent to which you agree or disagree with that statement. The more you agree with a statement, the higher will be the number you circle. The more you disagree with a statement, the lower will be the number you circle. Please make sure that you answer **EVERY ITEM** and that you circle **ONLY ONE** number per item. This is a measure of your personal beliefs; obviously, there are no right or wrong answers.

1=STRONGLY DISAGREE **(SD)**	4=SLIGHTLY AGREE **(A)**
2=MODERATELY DISAGREE **(MD)**	5=MODERATELY AGREE **(MA)**
3=SLIGHTLY DISAGREE **(D)**	6=STRONGLY AGREE **(SA)**

		SD	**MD**	**D**	**A**	**MA**	**SA**
1	If I get sick, it is my own behavior which determines how soon I get well again.	1	2	3	4	5	6
2	No matter what I do, if I am going to get sick, I will get sick.	1	2	3	4	5	6
3	Having regular contact with my physician is the best way for me to avoid illness.	1	2	3	4	5	6
4	Most things that affect my health happen to me by accident.	1	2	3	4	5	6
5	Whenever I don't feel well, I should consult a medically trained professional.	1	2	3	4	5	6
6	I am in control of my health.	1	2	3	4	5	6
7	My family has a lot to do with my becoming sick or staying healthy.	1	2	3	4	5	6
8	When I get sick, I am to blame.	1	2	3	4	5	6
9	Luck plays a big part in determining how soon I will recover from an illness.	1	2	3	4	5	6

10	Health professionals control my health.	1	2	3	4	5	6
11	My good health is largely a matter of good fortune.	1	2	3	4	5	6
12	The main thing that affects my health is what I, myself, do.	1	2	3	4	5	6
13	If I take care of myself, I can avoid illness.	1	2	3	4	5	6
14	Whenever I recover from an illness, it's usually because other people (for example, doctors, nurses, family, friends) have been taking good care of me.	1	2	3	4	5	6
15	No matter what I do, I'm likely to get sick.	1	2	3	4	5	6
16	If it's meant to be, I will stay healthy.	1	2	3	4	5	6
17	If I take the right actions, I can stay healthy.	1	2	3	4	5	6
18	Regarding my health, I can do only what my doctor tells me to do.	1	2	3	4	5	6

Appendix F

PROMIS-57 Scale

Please respond to each question or statement by marking one box per row.

	Physical Function	**Without any difficulty to do**	**With a little difficulty**	**With some difficulty**	**With much difficulty**	**Unable**
1	Are you able to do chores such as vacuuming or yard work?	☐	☐	☐	☐	☐
2	Are you able to go up and down stairs at a normal pace?	☐	☐	☐	☐	☐
3	Are you able to go for a walk of at least 15 minutes?	☐	☐	☐	☐	☐
4	Are you able to run errands and shop?	☐	☐	☐	☐	☐
		Not at all	**Very little**	**Somewhat**	**Quite a lot**	**Cannot do**
5	Does your health now limit you in doing two hours of physical labor?	☐	☐	☐	☐	☐
6	Does your health now limit you in doing moderate work around the house like vacuuming, sweeping floors or carrying in groceries?	☐	☐	☐	☐	☐
7	Does your health now limit you in lifting or carrying groceries?	☐	☐	☐	☐	☐
8	Does your health now limit you in doing heavy work around the house like scrubbing floors, or lifting or moving heavy furniture?	☐	☐	☐	☐	☐
	Anxiety **In the past 7 days…**	**Never**	**Rarely**	**Sometimes**	**Often**	**Always**
9	I felt fearful	☐	☐	☐	☐	☐

10	I found it hard to focus on anything other than my anxiety	☐	☐	☐	☐	☐
11	My worries overwhelmed me	☐	☐	☐	☐	☐
12	I felt uneasy	☐	☐	☐	☐	☐
13	I felt nervous	☐	☐	☐	☐	☐
14	I felt like I needed help for my anxiety	☐	☐	☐	☐	☐

Anxiety

	In the past 7 days…	**Never**	**Rarely**	**Sometimes**	**Often**	**Always**
15	I felt anxious	☐	☐	☐	☐	☐
16	I felt tense	☐	☐	☐	☐	☐

Depression

	In the past 7 days...	**Never**	**Rarely**	**Sometimes**	**Often**	**Always**
17	I felt worthless	☐	☐	☐	☐	☐
18	I felt helpless	☐	☐	☐	☐	☐
19	I felt depressed	☐	☐	☐	☐	☐
20	I felt hopeless	☐	☐	☐	☐	☐
21	I felt like a failure	☐	☐	☐	☐	☐

22	I felt unhappy	☐	☐	☐	☐	☐
23	I felt that I had nothing to look forward to .	☐	☐	☐	☐	☐
24	I felt that nothing could cheer me up	☐	☐	☐	☐	☐
	Fatigue **During the past 7 days…**	**Not at all**	**A little bit**	**Somewhat**	**Quite a bit**	**Very much**
25	I feel fatigued	☐	☐	☐	☐	☐
26	I have trouble starting things because I am tired	☐	☐	☐	☐	☐
	In the past 7 days…					
27	How run-down did you feel on average? ...	☐	☐	☐	☐	☐
28	How fatigued were you on average?	☐	☐	☐	☐	☐
29	How much were you bothered by your fatigue on average?	☐	☐	☐	☐	☐
30	To what degree did your fatigue interfere with your physical functioning?	☐	☐	☐	☐	☐

	Fatigue **In the past 7 days…**	**Never**	**Rarely**	**Sometimes**	**Often**	**Always**
31	How often did you have to push yourself to get things done because of your fatigue?	☐	☐	☐	☐	☐
32	How often did you have trouble finishing things because of your fatigue?	☐	☐	☐	☐	☐

	Sleep Disturbance **In the past 7 days…**	**Very poor**	**Poor**	**Fair**	**Good**	**Very good**
33	My sleep quality was	☐	☐	☐	☐	☐
	In the past 7 days…	**Not at all**	**A little bit**	**Somewhat**	**Quite a bit**	**Very much**
34	My sleep was refreshing.	☐	☐	☐	☐	☐
35	I had a problem with my sleep	☐	☐	☐	☐	☐
36	I had difficulty falling asleep	☐	☐	☐	☐	☐
37	My sleep was restless	☐	☐	☐	☐	☐
38	I tried hard to get to sleep	☐	☐	☐	☐	☐
39	I worried about not being able to fall asleep	☐	☐	☐	☐	☐
40	I was satisfied with my sleep.	☐	☐	☐	☐	☐
	Ability to Participate in Social Roles and Activities	**Never**	**Rarely**	**Sometimes**	**Usually**	**Always**
41	I have trouble doing all of my regular leisure activities with others	☐	☐	☐	☐	☐
42	I have trouble doing all of the family activities that I want to do	☐	☐	☐	☐	☐

43	I have trouble doing all of my usual work (include work at home)	☐	☐	☐	☐	☐
44	I have trouble doing all of the activities with friends that I want to do	☐	☐	☐	☐	☐
45	I have to limit the things I do for fun with others	☐	☐	☐	☐	☐

Ability to Participate in Social Roles and Activities

		Never	Rarely	Sometimes	Usually	Always
46	I have to limit my regular activities with friends	☐	☐	☐	☐	☐
47	I have to limit my regular family activities ..	☐	☐	☐	☐	☐
48	I have trouble doing all of the work that is really important to me (include work at home)	☐	☐	☐	☐	☐

Pain Interference

In the past 7 days…		Not at all	A little bit	Somewhat	Quite a bit	Very much
49	How much did pain interfere with your day to day activities?	☐	☐	☐	☐	☐
50	How much did pain interfere with work around the home?	☐	☐	☐	☐	☐
51	How much did pain interfere with your ability to participate in social activities? ...	☐	☐	☐	☐	☐
52	How much did pain interfere with your enjoyment of life?	☐	☐	☐	☐	☐

53	How much did pain interfere with the things you usually do for fun?	☐	☐	☐	☐	☐
54	How much did pain interfere with your enjoyment of social activities?	☐	☐	☐	☐	☐
55	How much did pain interfere with your household chores?	☐	☐	☐	☐	☐
56	How much did pain interfere with your family life?	☐	☐	☐	☐	☐

Pain Intensity

In the past 7 days…

57	How would you rate your pain on average?	☐ 0 **No pain**	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5	☐ 6	☐ 7	☐ 8	☐ 9	☐ 10 **Worst imaginable pain**